MontCAS
Criterion-Referenced Test
Alternate Assessment
(CRT-Alternate)

2009–10
Technical Report

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Chapter 1. OVERVIEW

1.1 OVERVIEW AND PURPOSE OF THE ASSESSMENT SYSTEM

The Montana Criterion-Referenced Test (CRT) was developed in accordance with the following federal laws: Title 1 of the Elementary and Secondary Education Act (ESEA) of 1994, P. L. 103–382, and the No Child Left Behind Act (NCLB) of 2001.

Montana grade-content CRT instruments are based on and aligned to Montana's content standards, benchmarks, and grade-level expectations in reading, mathematics, and science. Montana educators worked with Montana Office of Public Instruction (OPI) and Measured Progress to develop test items that assess how well students have met Montana grade-level expectations for each content area. In addition, NWREL performed an independent alignment study for mathematics and reading in 2006 and for science in 2007. NWREL's alignment studies can be found on OPI's Web site at http://opi.mt.gov/curriculum/MontCAS/. Montana CRT scores are intended to be useful indicators of the extent to which students have mastered material outlined in Montana reading, mathematics, and science content standards, benchmarks, and grade-level expectations. Each student's Montana CRT score should be used as part of a body of evidence regarding mastery and should not be used in isolation to make high-stakes decisions. Montana CRT scores are more reliable indicators of program success when aggregated to school, system, or state levels, particularly when monitored over the course of several years.

The primary purpose of the MontCAS Criterion-Referenced Test-Alternate Assessment (CRT-Alternate) is to measure student achievement against alternate standards. The Individuals with Disabilities Education Act (IDEA) requires that students with disabilities be included in each state's system of accountability and that students with disabilities have access to the general curriculum. NCLB speaks to the inclusion of all children in a state's accountability system by requiring states to report student achievement for all students, as well as for groups of students on a disaggregated basis. These federal laws reflect an ongoing concern about equity: all students should be academically challenged and taught to high standards, and all students must be involved in the educational accountability system.

To ensure the participation of all students in the state's accountability system, Montana has developed the CRT-Alternate. The CRT-Alternate is a point-in-time, direct measure of a student's performance based on alternate achievement standards aligned with Montana's Content Standards and Expanded Benchmarks. Only those IDEA-eligible students with the most significant cognitive disabilities are expected to participate in the CRT-Alternate.

1.2 PURPOSE OF THIS REPORT

The purpose of this report is to document the technical aspects of the 2010 CRT-Alternate. In the spring of 2010, students in grades 3–8 and 10 participated in the administration of the CRT-Alternate in both reading and mathematics. Students in grades 4, 8, and 10 were also assessed in science.

Historically, the intended audience of a technical report has been experts in psychometrics and educational research. This edition of the CRT-Alternate technical report is intended to be more accessible and useful to educators and other stakeholders by providing rich descriptions of general categories of information. In making some of the information more accessible, we have purposefully preserved the depth of technical information provided in our past technical reports. Some of the discussion and tables require the reader to have a working knowledge of measurement concepts such as "reliability" and "validity" and statistical concepts such as "correlation" and "central tendency." To fully understand some data, the reader must also be familiar with advanced topics in measurement and statistics.

1.3 CURRENT YEAR UPDATES

1.3.1 Preparing and Presenting Test Materials

Starting in 2010, test administrators are required to cut apart all student response choices (found in the Test Materials Kit and also listed in the "Materials" column of the CRT-Alternate Test Booklet) prior to test administration. Typically, test items are presented with four choices for the student. One of the choices is the correct response to the item, while the others are distractors. These four choices are presented as picture cards, number cards, answer cards, sentence strips, etc., depending on the test item. Cutting apart choice cards will allow the test administrator to present the choices to the student in a predetermined random order. The "Materials" column listing the student response choices for an item has been specifically designed to ensure that response choices for each item are presented in random order to the student. Test administrators should present the response choices on the student's work space from left to right based on the order of how the choices appear in the "Materials" column in the test booklet, unless individual student needs dictate a slightly different approach.

1.3.2 Student Evidence Form

Evidence Templates and Evidence Template Teacher Recording Sheets have been integrated into one form, the Teacher Recording Evidence Form. The new form should be completed by test administrators, not students, and should be used directly from the CRT-Alternate Test Booklet. The Teacher Recording Evidence Form provides a format for documenting the entire sequence of responses the student made to the test item. As the test item is presented to the student, the test administrator documents the modality used by the student to communicate a response, as well as the accuracy of the response at each step of the scaffolding process.

1.3.3 Answer Booklets

The Student Response Booklet, used for recording students' final scores, is now referred to as the Answer Booklet for both the general CRT and the CRT-Alternate. New in spring 2010, test administrators no longer need to fill in the bubble on page 2 of the Answer Booklet to indicate that the student participated in the CRT-Alternate Assessment. The grade 3 CRT-Alternate Answer Booklet now has a section for test administrators to record training questionnaire responses. This section remains the same as in previous years for all other grades.

Chapter 2. THE STUDENTS

2.1 IDENTIFICATION OF STUDENTS FOR PARTICIPATION

How a student with disabilities will participate in the state's accountability system is decided by the student's Individualized Education Program (IEP) team. When considering whether students with disabilities should participate in the CRT-Alternate, the IEP team should address each of the questions shown in Table 2-1.

Table 2-1. 2009–10 Montana CRT-ALT: Participation Guidelines

Participation Guidelines:		
For each of the statements below, answer YES or NO		
Does the student have an active IEP and receive services under the Individuals with Disabilities Education Act (IDEA)?	YES	NO
Do the student's demonstrated cognitive abilities and adaptive behavior require substantial adjustments to the general curriculum?	YES	NO
Do the student's learning objectives and expected outcomes focus on functional application of skills, as illustrated in the student's IEP's annual goals and short-term objectives?	YES	NO
Does the student require direct and extensive instruction to acquire, maintain, generalize, and transfer new skills?	YES	NO

If the IEP team determines that the answer to any of the above questions is "no," the student must participate in the general CRT. If all answers are "yes," the student is eligible to take the alternate assessment and is considered to have a significant cognitive disability. IEP teams are informed that the decision to have a student participate in the CRT-Alternate may not be based on excessive or extended absence; disability category; social, cultural, or economic factors; the amount of time receiving special education services; or academic achievement significantly lower than his or her same-age peers.

2.2 SUMMARY OF PARTICIPATION RATES

Because the general CRT provides full access to the vast majority of students, only about 100 students per grade are expected to participate in the CRT-Alternate. Table 2-2 displays the number of students who participated in the CRT-Alternate by grade and content area in spring 2010.

Table 2-2. 2009–10 Montana CRT-ALT:
Counts of Participating Students by Grade and Content Area

Grade	*Content Area*	*N*
3	Mathematics	92
	Reading	92
4	Mathematics	96
	Reading	96
	Science	96
5	Mathematics	106
	Reading	106
6	Mathematics	88
	Reading	88
7	Mathematics	104
	Reading	104
8	Mathematics	81
	Reading	81
	Science	81
10	Mathematics	108
	Reading	108
	Science	108

In accordance with 34 CFR 200.13 Adequate Yearly Progress in general, there is a 1% cap applied to the number of proficient and advanced scores based on the alternate assessment that may be included in AYP calculations at both the state and district levels.

Chapter 3. TEST CONTENT

3.1 ASSESSMENT DESIGN

Table 3-1 outlines the design of the CRT-Alternate and its related components. The first page of each tasklet provides a useful guide for test administrators by listing the following information:

- Content Standards and Expanded Benchmarks
- a brief explanation of the suggested tasklet
- parameters of the tasklet
- materials provided and other materials that are needed

Each content area tested is composed of five tasklets that consist of five to six questions each. Each tasklet contains one introductory item, as well as a suggested break at the end of the tasklet. Passages are provided on the second page of reading tasklets, as well as in the Materials Kit. The Materials Kit contains associated test materials needed to administer the assessment, such as student response cards, passages in storybook format, and specially adapted materials that provide symbol-text pairings for students who require a higher level of support. In order to collect evidence within each content area of the CRT-Alternate, the test administrator must complete two forms for specified test items. Specific scoring rules have been developed for the assessment, for which students are required to attempt every tasklet.

Table 3-1. 2009–10 Montana CRT-ALT: Test Design

Format	*Tasklet—five short activities of five or six items each per content area*
	Total of 25–28 items
Introductory Items	First item in each tasklet
	Designed to gain student's attention, introduce the activity, and show materials to be used
	Scored at levels 4 or 0 of the rubric
Breaks	Breaks between tasklets
Reading Passage	Page 2 of each reading tasklet
Evidence	1–2 tasklets in each content area require teacher recording evidence
	One form needs to be filled out for each item that requires evidence
Scoring Rule	Student must try every tasklet
	Halt the administration of a tasklet only if the student scores a 0 for three consecutive items after the tasklet is administered during two different test sessions
Materials Kits	Tabs in the Materials Kits are labeled by content area and tasklet number

3.1.2 CRT Alternate Items

Each item of the CRT-Alternate consists of the following:

- materials needed to administer the item
- communication support strategies the teacher may use to administer the item
- setup instructions and script for the teacher to follow
- scaffolding script for the suggested test activity
- the correct student response
- the performance indicator (The performance indicator—a description of what the question is measuring—is derived from the Montana Content Standards and Expanded Benchmarks.)

Figure 3-1 describes the information presented in each column of every test item in the CRT-Alternate. A sample item is provided in Figure 3-2.

Figure 3-1. 2009–10 Montana CRT-ALT: Information Presented in Test Items

Materials	*Teacher will:*	***Student Work*** *Student will:*	***Performance Indicators*** *Use Scoring Guide Transfer scores to student answer booklet*
The materials that are needed for each item and suggested student communication supports and strategies that may be helpful for some students are described in this column. Most materials can be found in the Material Kits, but teachers need to supply some materials.	This column contains information about how to display tasklet materials and prepare the student for the question. A script for the teacher appears in bold and italicized print and suggests language that can be used to present the item. Information on how to scaffold levels 3, 2, and 1 of the rubric for items that are scored at levels 4 through 0 is also provided in this column.	The correct student response and/or an explanation of how the student should be responding are provided in this column.	The performance indicator that is assessed by each item is identified in this column. The performance indicators come from the Montana Content Standards and Expanded Benchmarks.

Figure 3-2. 2009–10 Montana CRT-ALT: Grade 3 Mathematics Sample Item

Materials	*Teacher will*	***Student Work*** *Student will*	***Performance Indicators*** *Use Scoring Guide Transfer scores to student answer booklet*
• 1 large square • 1 large triangle • 1 large circle • 1 large rectangle Communication support strategies: • Student may look at/point to task materials to express a choice. • Request may be rephrased to require a yes/no response (e.g., "Is this the CIRCLE?"). • Student may tell teacher to "stop" at desired response as teacher sequentially points to each of the 4 choices.	Place all the shapes in random order on the work space. *"Show me the circle."* Scaffold: Level 3: Remove an incorrect response. Repeat task request. Level 2: Remove another incorrect response. Repeat task request. Level 1: "This is the circle." Assist the student as needed to identify the circle.	Identify a circle.	Identifies (names) shapes as circles, squares, triangles, rectangles, and ovals. 4 3 2 1 0 Performance Indicator: 4.1.1.6 Expanded Benchmark: 4.1.1

(For a complete sample tasklet see Appendix D.)

3.1.3 Test Administration Survey

The last page of the test booklet contains a list of questions regarding preparation and administration for the teacher to answer after the administration of the reading, mathematics, and science tasklets. Question 9 asks the teacher to report how much time he or she spent preparing for the assessment. Question 10 asks the teacher to report how much time was spent directly administering the tasklets to the student. Tables 3-2 and 3-3 summarize survey responses to questions 9 and 10.

Table 3-2. 2009–10 Montana CRT-ALT: Survey Responses—Question 9 Setup Time/Planning

Grade	*Content area*	*Average number of hours*
3	Reading	0.89
	Mathematics	0.87
4	Reading	1.22
	Mathematics	1.04
	Science	0.97
5	Reading	1.26
	Mathematics	1.18
6	Reading	0.93
	Mathematics	0.87
7	Reading	1.02
	Mathematics	0.96
8	Reading	0.93
	Mathematics	0.99
	Science	0.91
10	Reading	0.69
	Mathematics	0.78
	Science	0.80

Table 3-3. 2009–10 Montana CRT-ALT: Survey Responses—Question 10 Time Spent Administering Tasklets

Grade	*Content area*	*Average number of hours*
3	Reading	1.36
	Mathematics	1.32
4	Reading	1.29
	Mathematics	1.20
	Science	1.01
5	Reading	1.31
	Mathematics	1.26
6	Reading	1.26
	Mathematics	1.17
7	Reading	1.33
	Mathematics	1.25
8	Reading	1.15
	Mathematics	1.21
	Science	1.05
10	Reading	0.92
	Mathematics	1.00
	Science	0.92

3.2 SCAFFOLDING AS SCORING

As Gail McGregor of the University of Montana–Missoula notes in her paper titled "Examining the Interrater Reliability of Montana's CRT-Alternative" (Appendix E), "Administration of the CRT-Alt incorporates a response prompting methodology known as the 'system of least prompts' (Wolery, Ault &

Doyle, 1992). This is a well-established strategy that has been found to be effective as a teaching procedure for students with severe disabilities across a wide range of applications (Doyle, Wolery, Ault & Gast, 1988)." The system of least prompts, or scaffolding, requires the teacher (or test administrator) to administer each test item beginning at the highest level of independence. The student is asked the question and allowed sufficient time to produce the answer. If the student produces the answer, the teacher records the student's score for that question at the highest level. If the student answers incorrectly, the test administrator asks the question again, this time using the second-highest level of independence for that particular question.

The levels of independence are standardized and scripted within the test. The second-highest level of independence usually amounts to removing one or two choices from the set of possible answers. If the student provides the correct answer, the test administrator will record the score at the second-highest level of independence. If the student cannot provide the correct answer, the test administrator moves on to the next-highest level of independence, and so on, until the student is guided (hand-over-hand) to the correct answer and the student's score for that particular item is recorded at the lowest level of independence. More information regarding the research base of this method and a discussion regarding the selection of this method can be found in Appendix E (Interrater Reliability [Gail McGregor]).

3.3 BLUEPRINTS

3.3.1 Reading Assessment Blueprint

As indicated earlier, the framework for reading was based on Montana's reading Content Standards and Expanded Benchmarks, which identify the following five content standards that apply specifically to reading and reading comprehension:

- Reading Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
- Reading Standard 2: Students apply a range of skills and strategies to read.
- Reading Standard 3: Students set goals, monitor, and evaluate their reading progress. (This standard is not measurable in a statewide assessment.)
- Reading Standard 4: Students select, read, and respond to print and nonprint material for a variety of purposes.
- Reading Standard 5: Students gather, analyze, synthesize, and evaluate information from a variety of sources and communicate their findings in ways appropriate for their purposes and audiences.

The blueprint of the CRT-Alternate reading test was designed to mirror that of the general CRT with the same level of emphasis on concepts across all grades. The CRT-Alternate is designed so that students with significant cognitive disabilities are working on similar concepts and skills as students in general education classrooms who participate in the CRT, but those concepts and skills have been expanded toward the foundational level. Table 3-4 shows the standards measured at each grade level. For a complete list of

performance indicators for all reading, mathematics, and science test items (and the correlating standards assessed through each item), see Appendix F.

Table 3-4. 2009–10 Montana CRT-ALT:
Distribution of Reading Standards Measured at Each Grade

	STANDARD 1	*STANDARD 2*	*STANDARD 3*	*STANDARD 4*	*STANDARD 5*
Grade 3	13	8	*	4	0
Grade 4	9	12	*	3	1
Grade 5	13	8	*	4	0
Grade 6	13	7	*	1	4
Grade 7	13	7	*	1	4
Grade 8	11	10	*	3	1
Grade 10	14	6	*	3	2

Note: Standards 1 and 2 for reading are measured at every grade level, and the other standards are measured evenly across grade spans (elementary 3–5, middle 6–8, and high school 10).
*Standard 3 is not measurable in a statewide assessment.

3.3.2 Mathematics Assessment Blueprint

The mathematics framework was based on Montana's mathematics Content Standards and Expanded Benchmarks, which identify seven content standards, as shown below:

- Mathematics Standard 1: Students engage in the mathematical processes of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology.
- Mathematics Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
- Mathematics Standard 3: Students use algebraic concepts, processes, and language to model and solve a variety of real-world and mathematical problems.
- Mathematics Standard 4: Students demonstrate understanding of shape and an ability to use geometry.
- Mathematics Standard 5: Students demonstrate understanding of shape and an ability to use measurement processes.
- Mathematics Standard 6: Students demonstrate understanding of an ability to use data analysis, probability, and statistics.
- Mathematics Standard 7: Students demonstrate understanding of and an ability to use patterns, relations, and functions.

The mathematics test blueprint for the CRT-Alternate was designed to mirror the same level of emphasis on concepts across all grades that are represented in the general CRT. . The CRT-Alternate is designed so that students with significant cognitive disabilities are working on similar concepts and skills as students in general education classrooms who participate in the CRT, but those concepts and skills have been expanded toward the foundational level. Table 3-5 shows the standards measured at each grade level. For a complete list of performance indicators for all reading, mathematics, and science test items (and the correlating standards assessed through each item), see Appendix F.

Table 3-5. 2009–10 Montana CRT-ALT:
Distribution of Mathematics Standards Measured at Each Grade

	Standard 1	*Standard 2*	*Standard 3*	*Standard 4*	*Standard 5*	*Standard 6*	*Standard 7*
Grade 3	8	10	0	10	0	0	5
Grade 4	5	8	0	0	0	8	4
Grade 5	9	10	5	0	10	0	0
Grade 6	6	10	0	5	5	0	5
Grade 7	9	10	10	0	0	5	0
Grade 8	5	4	4	0	4	8	0
Grade 10	2	10	4	4	0	0	5

Note: Standards 1 and 2 for mathematics are measured at every grade level, and the other standards are measured evenly across grade spans (elementary 3–5, middle 6–8, and high school 10).

3.3.3 Science Assessment Blueprint

The science framework was based on Montana's science Content Standards and Expanded Benchmarks, which identify six content standards, as shown below:

- Science Standard 1: Students design, conduct, evaluate, and communicate processes and results of scientific investigations, and demonstrate the thinking skills associated with this procedural knowledge.
- Science Standard 2: Students demonstrate knowledge of properties, forms, changes, and interactions of physical and chemical systems, and demonstrate the thinking skills associated with this knowledge.
- Science Standard 3: Students demonstrate knowledge of characteristics, structures, and function of living things, the process and diversity of life, and how living organisms interact with each other and their environments, and demonstrate the thinking skills associated with this knowledge.
- Science Standard 4: Students demonstrate knowledge of the composition, structures, processes, and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.

- Science Standard 5: Students understand how scientific knowledge and technological developments impact today's societies and cultures.
- Science Standard 6: Students understand historical developments in science and technology.

The science test blueprint for the CRT-Alternate was designed to mirror the same level of emphasis on concepts across all grades that are represented in the general CRT. The CRT-Alternate is designed so that students with significant cognitive disabilities are working on similar concepts and skills as students in general education classrooms who participate in the CRT, but those concepts and skills have been expanded toward the foundational level. Table 3-6 shows the standards measured at each grade level. For a complete list of performance indicators for all reading, mathematics, and science test items (and the correlating standards assessed through each item), see Appendix F.

Table 3-6. 2009–10 Montana CRT-ALT:
Distribution of Science Standards Measured at Each Grade

	Standard 1	*Standard 2*	*Standard 3*	*Standard 4*	*Standard 5*	*Standard 6*
Grade 4	1	8	5	9	2*	1*
Grade 8	3	5	8	10	0*	0*
Grade 10	5	11	5	9	1*	0*

*Standards 5 and 6 subscores are not reported.

Chapter 4. TEST DEVELOPMENT

4.1 ITEM AND ACTIVITY DEVELOPMENT

Due to separate development cycles through the life span of the assessment program, the CRT-Alternate format varied slightly depending on the grade and content area assessed until 2008–2009. The original format of the CRT-Alternate consisted of one task activity per content area with 22–35 items. The original format, with one task activity (e.g., activity based around baking cake), narrowed the student's opportunity for success if the student was averse to that topic. Through feedback from the field, it was determined that a variety of activities within each content area would be more appropriate for this population. Furthermore, a variety of activities within a content area provides students more opportunities to demonstrate their knowledge and skills.

Designing the test around a series of short activities, or "tasklets," allows the teacher and student to break the administration into smaller time segments with less concern about disruption in continuity. With the recent redevelopment of grades 4, 8, and 10 in reading and mathematics, all content areas and grades now use the tasklet model. This consistency across every grade and content area provides ease and fluidity for test administration. Teachers are given a script, written directions, and scaffolding levels for each test item within the tasklets. (See section 3.2 for more information on scaffolding.)

The tasklets are developed from the expanded benchmarks, follow the scaffolding rubric, and are designed to show a student's performance in relation to the Montana reading, mathematics, and science standards and benchmarks. Students are encouraged to engage in the tasklet and show performance on the items through appropriate prompting by the test administrator. The teacher who administers the tasklet scores the student on each item through observation using a five-point scoring rubric. Every student takes the same form of the test. Test items are kept secure, but the performance indicators, which come from the Montana reading, mathematics, and science Content Standards and Expanded Benchmarks, are released every year on the OPI and Measured Progress Web sites.

4.2 DEVELOPMENT OF THE READING, MATHEMATICS, AND SCIENCE EXPANDED BENCHMARKS

Expanded benchmarks were developed for students with significant cognitive disabilities who are not working at the same level as their age-level counterparts. The benchmarks correspond to the standards for (a) end of grade 4, (b) end of grade 8, and (c) upon graduation—end of grade 12. Expansion is toward foundational skills and is keyed to grade-span rather than grade-level expectations due to the wide diversity of students in this population.

The expanded benchmarks were developed using Montana's Content Standards and Benchmarks for reading, mathematics, and science. Curriculum and special education specialists from Measured Progress, the OPI's contractor, developed a draft of the expanded benchmarks. The OPI, beta test teachers, the advisory

committee, and the development and revision workshop participants all provided input and recommendations for changes to the original draft. Measured Progress revised the expanded benchmarks using these recommendations, and the document was further revised to include grade-span expectations in accordance with new federal legislation. This document was then used as the basis for developing the assessment performance indicators. Table 4-1 shows how the document is organized and gives an example for each content area. The full Montana Content Standards and Expanded Benchmarks for the content areas are not included in this report because of their length. They are located on the OPI Web site at www.opi.mt.gov and the Measured Progress Web site at www.measuredprogress.org.

Montana educators worked with OPI and Measured Progress in the development and review (content and bias) of these tests to assess how well students have learned the Montana Content Standards and Expanded Benchmarks for their grade span. The underlying principle of the assessment is that all students should be taught using Montana's Content Standards and Expanded Benchmarks in reading, mathematics, and science. The tests are intended to measure how a student is performing in relation to those content standards. Results should be used to inform future instruction in the Montana content standards.

The 2009–10 administration of the CRT-Alternate was the seventh year of implementation. After the first year, extensive revisions were made based on feedback from teachers who administered the assessment. Alternate assessments, ranging from checklists to portfolios and performance-based tests, have been in place nationally since 2000 due to federal requirements. We are still learning appropriate ways to address reliability and validity for alternate assessments. To address the reliability of the CRT-Alternate, Cronbach's α, accuracy and consistency of performance-level categorization, and kappa analyses were performed. These analyses are summarized in Chapter 8. Each chapter in this report contributes important information to the validity argument by addressing one or more of the following aspects of the CRT-Alternate:

- test development
- test alignment
- test administration
- scoring item analyses
- reliability
- scaling
- performance levels
- reporting

Table 4-1. 2009–10 Montana CRT-ALT: Breakdown of Standards and Expanded Benchmarks

Term and description	*Example*		
Content area	*Reading*	*Mathematics*	*Science*
Standard Learning outcome expected for all students throughout all grades	Standard 2: Students apply a range of skills and strategies to read.	Standard 2: Students demonstrate understanding of and ability to use Numbers and Operations.	Standard 2: Students demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems, and demonstrate the thinking skills associated with this knowledge.
Essence of the Standard A statement of the standard separating the essential components	Interpret print and non-print information.	Number concepts, concepts of operations, computing and estimating.	Matter exists in a variety of forms. All physical interactions involve changes in energy. Therefore, knowledge of matter and energy is essential to interpreting, explaining, predicting, and influencing change in our world.
Benchmark **Grade Level Expectation (GLE)** Expectation for typical students described for each grade level	2.6, Grade 8: Students will develop vocabulary through the use of context clues, analysis of word parts, auditory clues, and reference sources (e.g., dictionary, thesaurus, and glossary).	2.2, Grade 4: Students will use the number system by counting, grouping, and applying place value concepts.	2.2, Grade 4: Examine, describe, compare, and classify objects in terms of common physical properties.
Expanded Benchmark Benchmark skill or concept expanded from the typical GLE to a basic level	2.6.2: Student will use words/pictures/symbols/objects to communicate.	2.2.1: Student will demonstrate an understanding of whole numbers.	2.2.2: Student will compare the common physical properties of two objects.
Performance Indicator Expanded benchmark expressed in a measurable and observable statement of a specific performance	2.6.2.1: Student will identify a word/picture/symbol/object used to name a familiar place.	2.2.1.2: Student will demonstrate the concept of one (e.g., “Hit the switch one time”; “Give me one”).	2.2.2.1 Student will identify the similarities and differences in the size of two objects or substances.
Prompt The script for the directions the test administrator delivers to the student, calling for the specific behavior	Item 4: “Show me the word/picture/symbol/object that means ‘library.’”	Item 4: “These are counters. We are going to use these in our activity. Show me one counter.”	Item 2: “This box has a hole in it. Which object is small enough to fit through this hole?”

4.3 NEW LAYOUT OF EVIDENCE FORMS AND ITEMS

Evidence Templates and Evidence Template Teacher Recording Sheets have been integrated into one form, the Teacher Recording Evidence Form. The new form should be completed by test administrators, not students, and should be used directly from the CRT-Alternate Test Booklet. The Teacher Recording Evidence Form provides a format to document the entire sequence of responses made by the student to the test item. As the test item is presented to the student, the test administrator documents the modality used by the student to communicate a response, as well as the accuracy of the response at each step of the scaffolding process. (See the sample recording sheet in Figure 4-1.)

Figure 4-1. 2009–10 Montana CRT-ALT: Sample Evidence Template Teacher Recording Sheet

Sample Reading Tasklet #	Item 6
Describe how the student communicated their response.	❒ Used words to respond ❒ Used communication device/display ❒ Pointed to/manipulated task materials ❒ Used auditory scanning ❒ Used gestures/sign language ❒ Other form of communication
Describe student's initial response to the task before scaffolding.	❒ indicated " tree" ❒ indicated "dog" ❒ indicated "house" ❒ indicated "ball" ❒ no response
If applicable, describe the student's response after level 3 scaffolding.	❒ indicated " tree" ❒ indicated "dog" ❒ indicated "house" ❒ indicated "ball" ❒ no response
If applicable, describe the student's response after level 2 scaffolding.	❒ indicated " tree" ❒ indicated "dog" ❒ indicated "house" ❒ indicated "ball" ❒ no response
If applicable, describe the student's response after level 1 scaffolding.	❒ indicated " tree" ❒ indicated "dog" ❒ indicated "house" ❒ indicated "ball" ❒ no response

continued

Sample Reading Tasklet #	Item 6
If applicable, check the box and describe the student's behavior if the student was not responsive to the task.	❒ indicated " tree" ❒ indicated "dog" ❒ indicated "house" ❒ indicated "ball" ❒ no response

Chapter 5. ADMINISTRATION AND TRAINING

5.1 ADMINISTRATION GUIDELINES

The CRT-Alternate is administered by a special education teacher or another certified individual who has worked extensively with the student and is trained in the assessment procedures. Because this is an on-demand performance assessment, the administrator is also the scorer. This becomes a consideration with regard to reliability, where values tend to be inflated due to administrator effects.

The test administrator may find it helpful to ask another person in the school to assist with the administration. The additional persons who assist in administration may include, but are not limited to, the following:

- parent
- general education teacher
- paraprofessional
- special service provider (speech/language therapist, psychologist, occupational or physical therapist, etc.)
- school counselor
- principal
- other educational professional

5.2 PROCEDURES

A training CD with an audio PowerPoint presentation was sent to teachers who would be administering the CRT-Alternate. Test administrators were instructed to follow the steps below to prepare for the assessment:

- View training CD and participate in question/answer sessions.
- Receive the secure CRT-Alternate Test Booklet from the test coordinator.
- Receive hard copy of the test materials, CD with test materials, and training CD. Teachers may have needed to further adapt materials to meet the needs of students taking the assessment. Guidelines and examples for adapting materials were given in the "Materials" section of the test booklet and on pages 28–30 of the CRT-Alternate Administration Manual.
- Download the CRT-Alternate Administration Manual and scoring rubric from the OPI or Measured Progress Web site.
- Read the CRT-Alternate Administration Manual to become familiar with the administration and scoring directions.

- Read the CRT-Alternate Test Booklet to become familiar with the tasklets and performance indicators.
- Consider how the student will access and respond to the test and determine the adaptations and supports the student will need.
- Check to ensure all materials and resources needed are available to complete the tasklets. For example, the grade 8 mathematics tasklet asks the student to use a ruler to find the length of a street on a provided map. The test administrator needs to locate the ruler the student is most familiar with in order to administer the test item.
- Provide the assistive technologies the student needs to access the materials and respond to the test items.
- Schedule the assessment administration session for a time and place that are optimal for student effort and focus.

5.3 PROFESSIONAL DEVELOPMENT AND TRAINING PROGRAMS

System and school test coordinators were instructed to read the Test Coordinator's Manual before testing and become familiar with the instructions provided in the CRT-Alternate Administration Manual. The Test Coordinator's Manual and the CRT-Alternate Administration Manual provided each school with checklists to help prepare for testing. The checklists outlined tasks to be performed before, during, and after test administration. Along with providing these checklists, the manuals outlined the nature of the testing material being sent to each school, how to inventory the material, how to track it during administration, and how to return the material once testing was complete. It also contained information about including or excluding students. Test administrators received copies of the Test Coordinator's Manual, the CRT-Alternate Administration Manual, and the test-administrator training CD. Training materials and the PowerPoint presentations from the training CD were posted on the OPI Web site. Below is a summary of the information presented in the training CD:

- Important Dates
- CRT-Alternate Overview
- Week 1 of Testing
- Eligibility for the CRT-Alternate
- Who Should Administer the CRT-Alternate
- Materials Needed for the Presentation and for Testing
- About the Tests
- Test Booklet Organization
- Assessment Format
- Introductory Item
- Test Administration Strategies
- Scaffolding

- Scoring and Scoring Rules
- Dealing with Resistance
- Student Evidence
- Test Materials
- Answer Booklet
- Student Barcode Labels
- Returning Student Materials
- Final Administration Hints
- Questions and Answers

To answer any questions not addressed in the training, contact information for OPI, Measured Progress, and the University of Montana–Missoula was provided to teachers, test administrators, and test coordinators. The contact information was provided on the training CD, in the manual, and on the memo sent out with the test materials.

Chapter 6. SCORING

6.1 SCORING THE ASSESSMENT

The CRT-Alternate is administered to a student one-on-one, possibly with the help of another administrator. The teacher scores every item as it is administered using the rubric and a process called scaffolding.

6.2 USING SCAFFOLDING TO GATHER STUDENT PERFORMANCE INFORMATION

Scaffolding is a process of providing the student with the support needed to respond to the questions in the test. It is similar to support during daily instruction, in which many strategies are used frequently to ensure that students experience success. For example, if a student is unable to make a correct choice from a display of four pictures, the teacher reduces the complexity by removing one of the choices. Scaffolding serves this same function and is provided so that students will experience success in completing the test items. An important result of scaffolding is that it helps students demonstrate their knowledge and skills. These skills can be described and measured, resulting in an accurate picture of what students can do.

The scoring system in the CRT-Alternate allows for increasing amounts of scaffolding, which is provided only when the student does not respond at all or responds incorrectly. This approach is sometimes described as a "least to most" prompt hierarchy (see Chapter 3.2 for a description of the scaffolding-as-scoring paradigm). Each tasklet begins with an item that introduces the subject and materials that will be used in the test activity. These items are scored as either a 4 (student responds accurately and with no assistance) or a 0 (student does not respond or actively resists). Items scored this way (at a level 4 or 0) may also be found further into the tasklet when new materials are being introduced.

After the introductory items are scored, each subsequent item within the tasklet is scored on a five-point descending scale from 4 through 0, where 4 represents a correct, independent response; 1, a correct response that has been completely guided by the teacher; and 0, when the student does not respond or actively resists participation in the test activity. (The scoring rubric is presented later in this section.)

The scores from all items, including the introductory items and the subsequent items within each tasklet, are added together to produce a raw score (i.e., total score) for the test. The raw score is then scaled and a performance level assigned for the content area. (See Chapter 9 for details on scaling.)

A script is provided for scaffolding each of the test items. It describes the prompts to scaffold the student to a level 3, level 2, and level 1. It may be used verbatim or modified by the teacher to meet the needs of the student. For each test item, level 1 prompting is full support from the teacher, guiding the student to the correct response. Depending on the student and the test item, this may involve physically guiding the student to the correct response or some other form of support that ensures that the student responds correctly.

It is critical that the test administrator deliver each item in a way that allows the student the opportunity to score at level 4. That is, it is first assumed that the student can respond independently to each

item, even if that is not the usual instructional practice. The following are directions given to test administrators in order to standardize scaffolding procedures across the state:

- Follow the guidelines to observe the student demonstrating the performance required and allow adequate wait time for the student to process the information and respond without assistance. Do not repeat the question multiple times.
- If the student does not respond or responds incorrectly, scaffold the student to level 3—"Student responds accurately when teacher clarifies, highlights important information, or reduces the range of options to three." Again, give the student adequate wait time.
- If the student does not respond or responds incorrectly, scaffold to level 2—"Student responds accurately when teacher provides basic yes/no questions or forced choices between two options."
- If the student still does not respond with the desired behavior, scaffold to level 1—"Student is guided to correct response by teacher (e.g., modeling the correct response or providing full physical assistance)."
- If the student resists participation for an item, the test administrator will indicate a 0—"Student does not respond or actively resists."

Scaffolding, in other words, is the process for determining the amount of information the student needs to reach the correct response. If the student can respond independently (level 4), no further information is needed by the student. If the student does not respond accurately or independently, more information is given about the item (in accordance with a script in the CRT-Alternate Test Booklet) and/or the choices are reduced (level 3). This funneling toward the correct response continues (according to the script) as the student needs more assistance, by providing specific information about the item and/or a forced choice between two options (level 2) and finally by guiding the student to the correct response (level 1). In this way, the student is not expected to either "get it" or "not get it" as in most on-demand assessments. The CRT-Alternate considers the level of assistance that students require to demonstrate their knowledge and skills and thus provides more precise information about student performance and achievement. This system is designed to be sensitive to small increments of change in student performance, an important consideration in describing the learning outcomes of students with severe disabilities.

This process must be used systematically with *every* item identified for scoring within each tasklet. The intent is to give the student every opportunity to perform independently on each item. Scaffolding examples are provided in the CRT-Alternate Administration Manual. The consistent use of required levels of assistance during administration/scoring will increase item intercorrelations and overall test reliability.

6.3 SCORING RUBRIC

Each tasklet begins with introductory items scored at only levels 4 and 0. The rubric below is used to score remaining items on a five-point scale of 4–0.

4	*3*	*2*	*1*	*0*
Student responds accurately and with no assistance.	Student responds accurately when teacher clarifies, highlights important information, or reduces the range of options to three.	Student responds accurately when teacher provides basic yes/no questions or forced choices between two options.	Student is guided to correct response by teacher (e.g., modeling the correct response or providing full physical assistance).	Student does not respond or actively resists.

6.4 SCORING RULES

Instructions and examples provided to test administrators in both the CRT-Alternate Administration Manual and training CD illustrate the following rules for scoring:

- Begin with the introductory items and score 4 or 0.
- Use the full scale of 4, 3, 2, 1, and 0 to score the remaining items within each tasklet. Start with level 4 and work systematically through the scaffolding system for every performance indicator as necessary, based on the student's response.
- Allow for appropriate wait time as you scaffold through each level of the scoring rubric.
- Do not repeat questions or directions numerous times.
- Visual, verbal, gestural, and physical cues are allowed in each level except 4.
- Record only one score for each item.
- Score 0 only if the student does not respond or actively resists.
- Halt the administration if the student is showing a pattern of resisting, is becoming fatigued, or is not participating in any way, and resume testing at another time.
- Score every item in a tasklet until the student scores at level 0 for three consecutive items. Stop the administration of the assessment at this point. On the following assessment session, re-administer the final three items on which the student scored a 0. If the student receives a level 0 on these three consecutive items again, halt the administration of the tasklet—leaving the remaining items in the tasklet blank—and move on to the next tasklet.

Test administrators were reminded that the student must start all five tasklets in each content area, and if the student scores at level 0 for three consecutive items, the teacher must attempt to re-administer the tasklet.

Chapter 7. CLASSICAL ITEM ANALYSIS

As noted in Brown (1983), "A test is only as good as the items it contains." A complete evaluation of a test's quality must include an evaluation of each item. Both *Standards for Educational and Psychological Testing* (AERA, 1999) and *Code of Fair Testing Practices in Education* (Joint Committee on Testing Practices, 2004) include standards for identifying quality items. While the specific statistical criteria identified in these publications were developed primarily for general—not alternate—assessment, the principles and some of the techniques apply within the alternate assessment framework as well.

Both qualitative and quantitative analyses were conducted to ensure that CRT-Alternate items met these standards. Qualitative analyses are described in earlier sections of this report; this section focuses on the quantitative evaluations. The statistical evaluations discussed are difficulty indices and discrimination (item-test correlations) as well as differential item functioning (DIF), which is used to evaluate potential item bias. The item analyses presented here are based on the statewide administration of the CRT-Alternate in spring 2010. Note that dimensionality analyses, which can provide additional information about how items function, could not be conducted for the CRT-Alternate because of the small population of students who take the test.

7.1 ITEM DIFFICULTY AND DISCRIMINATION

All tasks were evaluated in terms of item difficulty according to standard classical test theory practices. "Difficulty" was defined as the average proportion of points achieved on an item and was measured by obtaining the average score on an item and dividing by the maximum score for the item. CRT-Alternate items are scored polytomously, such that a student can achieve a score of 0, 1, 2, 3, or 4 for an item. By computing the difficulty index as the average proportion of points achieved, the items are placed on a scale that ranges from 0.0 to 1.0. Although this index is traditionally described as a measure of difficulty, it is properly interpreted as an *easiness* index, because larger values indicate easier items.

An index of 0.0 indicates that all students received no credit for the item, and an index of 1.0 indicates that all students received full credit for the item. Items that have either a very high or very low difficulty index are considered to be potentially problematic, because they are either so difficult that few students get them right or so easy that nearly all students get them right. In either case, such items should be reviewed for appropriateness for inclusion on the assessment. If an assessment were composed entirely of very easy or very hard items, all students would receive nearly the same scores, and the assessment would not be able to differentiate high-ability students from low-ability students.

It is worth mentioning that using a norm-referenced criterion such as *p*-values to evaluate test items is somewhat contradictory to the purpose of a criterion-referenced assessment like the CRT-Alternate. Criterion-referenced assessments are primarily intended to provide evidence on student progress relative to a standard rather than to differentiate among students. Thus, the generally accepted criteria regarding classical

item statistics are only cautiously applicable to the CRT-Alternate. Difficulty indices (i.e., item level classical stats) for each item are provided in Appendix G.

A desirable feature of an item is that the higher-ability students perform better on the item than do lower-ability students. The correlation between student performance on a single item and total test score is a commonly used measure of this characteristic of an item. Within classical test theory, this item-test correlation is referred to as the item's "discrimination," because it indicates the extent to which successful performance on an item discriminates between high and low scores on the test. The discrimination index used to evaluate CRT-Alternate tasks was the Pearson product-moment correlation. The theoretical range of this statistic is -1.0 to 1.0.

Discrimination indices can be thought of as measures of how closely an item assesses the same knowledge and skills assessed by other items contributing to the criterion total score. That is, the discrimination index can be thought of as a measure of construct consistency. In light of this interpretation, the selection of an appropriate criterion total score is crucial to the interpretation of the discrimination index. For the CRT-Alternate, the test total score, excluding the item being evaluated, was used as the criterion score.

A summary of the item difficulty and item discrimination statistics for each grade/content area combination is presented in Table 7-1. The mean difficulty values shown in the table indicate that, overall, students performed well on the items on the CRT-Alternate. In interpreting these values, it is important to note that item scores lower than 2 are fairly rare on the CRT-Alternate, and a score of 0 is awarded only if the student refuses to respond. These aspects of the item score scale should be considered when evaluating the difficulty values presented in Table 7-1. In contrast to alternate assessments, the difficulty values for assessments designed for the general population tend to be in the 0.4 to 0.7 range for the majority of items. Because the nature and purpose of alternate assessments are different from those of general assessments, and because very few guidelines exist as to criteria for interpreting these values for alternate assessments, the values presented in Table 7-1 should not be interpreted to mean that the students performed better on the CRT-Alternate than the students who took general assessments did on those tests.

Also shown in Table 7-1 are the mean discrimination values. A couple of factors should be considered when interpreting these values. First, all items on the CRT-Alternate are polytomously scored. In general, polytomous items will tend to have higher discrimination values than dichotomous items (e.g., multiple-choice items) because the former are less affected by a restriction of range. Second, the CRT-Alternate item score scale awards points based on the extent to which students require assistance to complete the tasklet. Because students who require assistance with one task are more likely to require assistance with other tasklets, discrimination values will be higher for items scored in this way.

As with the item difficulty values, because the nature and use of the CRT-Alternate are different from those of a general assessment such as the general CRT, and because very few guidelines exist as to criteria for

interpreting these values for alternate assessments, the statistics presented in Table 7-1 should be interpreted with caution.

Table 7-1. 2009–10 Montana CRT-Alternate: Item Difficulty and Discrimination Statistics

Subject	*Grade*	*N*	*P*-value		Discrimination	
			Mean	*SD*	*Mean*	*SD*
Mathematics	3	25	0.85	0.10	0.62	0.15
	4	25	0.78	0.11	0.65	0.09
	5	25	0.84	0.06	0.75	0.10
	6	25	0.82	0.08	0.76	0.17
	7	25	0.83	0.13	0.63	0.15
	8	25	0.78	0.12	0.65	0.11
	10	25	0.86	0.07	0.78	0.14
Reading	3	25	0.84	0.09	0.58	0.14
	4	25	0.81	0.10	0.68	0.11
	5	25	0.81	0.10	0.66	0.13
	6	25	0.83	0.09	0.70	0.17
	7	25	0.85	0.10	0.61	0.18
	8	25	0.81	0.11	0.63	0.20
	10	25	0.85	0.08	0.74	0.11
Science	4	26	0.86	0.09	0.67	0.15
	8	26	0.84	0.11	0.62	0.20
	10	28	0.89	0.05	0.79	0.10

In addition to the item difficulty and discrimination summaries presented above, item level classical statistics and item level score distributions were also calculated. Item level classical statistics are provided in Appendix G; item difficulty and discrimination values are presented for each item. Item level score distributions are provided in Appendix H; for each item, the percentage of students who received each score point is presented.

7.2 BIAS/FAIRNESS

Code of Fair Testing Practices in Education (Joint Committee on Testing Practices, 2004) explicitly states that subgroup differences in performance should be examined when sample sizes permit, and actions should be taken to make certain that differences in performance are due to construct-relevant, rather than irrelevant, factors. *Standards for Educational and Psychological Testing* (AERA, 1999) includes similar guidelines.

The standardization DIF procedure (Dorans and Kulick, 1986) is designed to identify items for which subgroups of interest perform differently, beyond the impact of differences in overall achievement. The DIF procedure calculates the difference in item performance for two groups of students (at a time) matched for achievement on the total test. Specifically, average item performance is calculated for students at every total

score. Then an overall average is calculated, weighting the total score distribution so that it is the same for the two groups. The criterion (matching) score for the Montana CRT-Alternate was the total raw score.

When differential performance between two groups occurs on an item (i.e., a DIF index in the "low" or "high" categories, explained below), it may or may not be indicative of item bias. Course-taking patterns or differences in school curricula can lead to DIF but for construct-relevant reasons. On the other hand, if subgroup differences in performance could be traced to differential experience (such as geographical living conditions or access to technology), the inclusion of such items should be reconsidered.

Computed DIF indices range from -1.0 to 1.0. Dorans and Holland (1993) suggested that index values between -0.05 and 0.05 should be considered negligible. The preponderance of CRT-Alternate items fell within this range. Dorans and Holland further stated that items with values between -0.10 and -0.05 and between 0.05 and 0.10 (i.e., "low" DIF) should be inspected to ensure that no possible effect is overlooked, and that items with values outside the [-0.10, 0.10] range (i.e., "high" DIF) are more unusual and should be examined very carefully.

For the 2009–10 Montana CRT-Alternate tests, five subgroup comparisons were evaluated for DIF:

- Male versus female
- White versus Hispanic
- White versus Native American
- Disability versus No Disability
- Low Income versus Not Low Income

Other comparisons (e.g., other ethnic groups) were not analyzed using DIF procedures, because limited sample sizes would have inflated type I error rates. Appendix I presents the number of items classified as either "low" or "high" DIF, overall and by group favored.

Chapter 8. CHARACTERIZING ERRORS ASSOCIATED WITH TEST SCORES

The Montana CRT-Alternate scores are used mainly for school, district, and state level accountability in the federal No Child Left Behind (NCLB) and Montana state accountability systems. The students are classified as proficient or not proficient and these classifications are included in the state's adequate yearly progress (AYP) calculation. In this case, the reliability of individual students' scores, albeit not ignorable, becomes much less important. The scores have been translated into a yes/no decision for each student and then aggregated across students. Several different methods of evaluating test reliability are discussed below.

8.1 RELIABILITY

In the previous chapter, individual item characteristics of the 2009–10 Montana CRT-Alternate were presented. Although individual item performance is an important focus for evaluation, a complete evaluation of an assessment must also address the way in which items function together and complement one another. Any measurement includes some amount of measurement error. No academic assessment can measure student performance with perfect accuracy; some students will receive scores that underestimate their true ability, and other students will receive scores that overestimate their true ability. Items that function well together produce assessments that have less measurement error (i.e., the error is small on average). Such assessments are described as "reliable."

There are a number of ways to estimate an assessment's reliability. One approach is to split all test items into two groups and then correlate students' scores on the two half-tests. This is known as a split-half estimate of reliability. If the two half-test scores correlate highly, the items on them are likely measuring very similar knowledge or skills. It suggests that measurement error will be minimal.

The split-half method requires psychometricians to select items that contribute to each half-test score. This decision may have an impact on the resulting correlation, since each different possible split of the test into halves will result in a different correlation. Another problem with the split-half method of calculating reliability is that it underestimates reliability, because test length is cut in half. All else being equal, a shorter test is less reliable than a longer test. Cronbach (1951) provided a statistic, alpha (α), that avoids the shortcomings of the split-half method by comparing individual item variances to total test variance. Cronbach's α was used to assess the reliability of the 2009–10 Montana CRT-Alternate tests. The formula is as follows:

$$\alpha \equiv \frac{n}{n-1}\left[1-\frac{\sum_{i=1}^{n}\sigma^{2}_{(Y_i)}}{\sigma^{2}_{x}}\right]$$

where
I indexes the item,

n is the number of items,

$\sigma^2_{(Y_i)}$ represents individual item variance, and

σ^2_x represents the total test variance.

Table 8-1 presents raw score descriptive statistics (maximum possible score, average, and standard deviation), Cronbach's α coefficient, and raw score standard errors of measurement (SEMs) for each content area and grade.

Table 8-1. 2009–10 MT CRT-Alt: Raw Score Descriptive Statistics, Cronbach's Alpha And Standard Errors of Measurement (SEM) by Content Area and Grade

Subject	*Grade*	*Number of Students*	Raw Score			*Alpha*	*SEM*
			Maximum	*Average*	*Standard Deviation*		
Mathematics	3	92	100	84.49	17.47	0.90	5.56
	4	94	100	77.16	21.22	0.93	6.08
	5	103	100	82.70	23.16	0.96	5.64
	6	88	100	81.13	25.81	0.96	5.57
	7	102	100	82.10	17.58	0.94	5.23
	8	81	100	76.17	22.05	0.93	4.87
	10	107	100	83.53	25.91	0.87	5.28
Reading	3	92	100	82.85	17.80	0.88	5.03
	4	95	100	79.95	21.61	0.93	4.87
	5	103	100	80.07	20.69	0.93	4.38
	6	88	100	80.99	23.73	0.96	4.01
	7	104	100	84.71	15.56	0.93	5.77
	8	81	100	79.51	20.23	0.93	5.31
	10	107	100	82.95	23.88	0.91	6.40
Science	4	93	104	87.11	21.60	0.94	9.27
	8	81	104	84.46	22.74	0.92	7.15
	10	107	112	96.91	27.90	0.95	6.19

An alpha coefficient toward the high end is taken to mean that the items are likely measuring very similar knowledge or skills (i.e., that they complement one another and suggest a reliable assessment).

Subgroup Reliability

The reliability coefficients discussed in the previous section were based on the overall population of students who took the 2009–10 CRT-Alt tests. Subgroup Cronbach's α's were calculated using the formula defined above using only the members of the subgroup in question in the computations and are reported in Appendix J. Note that statistics are reported only for subgroups with at least 10 students. For mathematics, subgroup reliabilities ranged from 0.71 to 0.97; for reading, from 0.71 to 0.98; and for science, from 0.68 to 0.96.

For several reasons, the results of this section should be interpreted with caution. First, inherent differences between grades and content areas preclude making valid inferences about the quality of a test based on statistical comparisons with other tests. Second, reliabilities are dependent not only on the measurement properties of a test but on the statistical distribution of the studied subgroup. For example, it can be readily seen in Appendix J that subgroup sample sizes may vary considerably, which results in natural variation in reliability coefficients. Or α, which is a type of correlation coefficient, may be artificially depressed for subgroups with little variability (Draper & Smith, 1998). Third, there is no industry standard to interpret the strength of a reliability coefficient, and this is particularly true when the population of interest is a single subgroup.

Reporting Categories Reliability

In addition to the subgroup reliabilities presented in the previous section, reliabilities for the CRT-Alternate reporting categories were also calculated. Cronbach's α coefficients for reporting categories were calculated via the same alpha formula defined at the beginning of Chapter 8 using just the items of a given reporting category in the computations. These results are presented in Appendix K. Once again, as expected, because they are based on a subset of items rather than the full test, computed reporting category reliabilities were lower (sometimes substantially so) than were overall test reliabilities, and interpretations should take this into account.

For mathematics, reporting category reliabilities ranged from 0.66 to 0.92; for reading, from 0.56 to 0.92; and for science, from 0.69 to 0.91. In general, the reporting category reliabilities were lower than those based on the total test and approximately to the degree one would expect based on Classical Test Theory (CTT). Qualitative differences between grades and content areas once again preclude valid inferences about the quality of the full test based on statistical comparisons among subtests.

8.2 DECISION ACCURACY AND CONSISTENCY

While related to reliability, the accuracy and consistency of classifying students into performance categories is an even more important issue in a standards based reporting framework (Livingston & Lewis, 1995). Unlike generalizability coefficients, decision accuracy and consistency can usually be computed with the data currently available for most alternate assessments. For every 2009–10 CRT-Alt grade and content area, each student was classified into one of the following performance levels: novice, nearing proficiency, proficient, and advanced. This section of the report explains the methodologies used to assess the reliability of classification decisions and presents the results.

Accuracy refers to the extent to which decisions based on test scores match decisions that would have been made if the scores did not contain any measurement error. Accuracy must be estimated, because errorless test scores do not exist. Consistency measures the extent to which classification decisions based on test scores match the decisions based on scores from a second, parallel form of the same test. Consistency can

be evaluated directly from actual responses to test items if two complete and parallel forms of the test are given to the same group of students. In operational test programs, however, such a design is usually impractical. Instead, techniques have been developed to estimate both the accuracy and consistency of classification decisions based on a single administration of a test. The Livingston and Lewis (1995) technique was used for the 2009–10 CRT-Alternate because it is easily adaptable to all types of testing formats, including mixed format tests.

The accuracy and consistency estimates reported in Appendix L make use of "true scores" in the classical test theory sense. A true score is the score that would be obtained if a test had no measurement error. Of course, true scores cannot be observed and so must be estimated. In the Livingston and Lewis method, estimated true scores are used to categorize students into their "true" classifications.

For the 2009–10 CRT-Alt, after various technical adjustments (described in Livingston & Lewis, 1995), a four by four contingency table of accuracy was created for each content area and grade, where cell [*i*, *j*] represented the estimated proportion of students whose true score fell into classification *i* (where *i* = 1 to 4) and observed score into classification *j* (where *j* = 1 to 4). The sum of the diagonal entries (i.e., the proportion of students whose true and observed classifications matched) signified overall accuracy.

To calculate consistency, true scores were used to estimate the joint distribution of classifications on two independent, parallel test forms. Following statistical adjustments per Livingston and Lewis (1995), a new four by four contingency table was created for each content area and grade and populated by the proportion of students who would be categorized into each combination of classifications according to the two (hypothetical) parallel test forms. Cell [*i*, *j*] of this table represented the estimated proportion of students whose observed score on the first form would fall into classification *i* (where *i* = 1 to 4) and whose observed score on the second form would fall into classification *j* (where *j* = 1 to 4). The sum of the diagonal entries (i.e., the proportion of students categorized by the two forms into exactly the same classification) signified overall consistency.

Another way to measure consistency is to use Cohen's (1960) coefficient κ (kappa), which assesses the proportion of consistent classifications after removing the proportion of consistent classifications that would be expected by chance. It is calculated using the following formula:

$$\kappa = \frac{\text{(Observed agreement)} \; - \; \text{(Chance agreement)}}{1 \; - \; \text{(Chance agreement)}} = \frac{\sum_i C_{ii} - \sum_i C_{i.}C_{.i}}{1 - \sum_i C_{i.}C_{.i}},$$

where
$C_{i.}$ is the proportion of students whose observed achievement level would be Level *i* (where *i* = 1 – 4) on the first hypothetical parallel form of the test;
C_{i} is the proportion of students whose observed achievement level would be Level *i* (where *i* = 1 – 4) on the second hypothetical parallel form of the test; and
C_{ii} is the proportion of students whose observed achievement level would be Level *i* (where *i* = 1 – 4) on both hypothetical parallel forms of the test.

Because κ is corrected for chance, its values are lower than are other consistency estimates.

The accuracy and consistency analyses described above are provided in Table L-1 of Appendix L. The table includes overall accuracy and consistency indices, including kappa. Accuracy and consistency values conditional upon performance level are also given. For these calculations, the denominator is the proportion of students associated with a given performance level. For example, the conditional accuracy value is 0.83 for novice for grade 3 mathematics. This figure indicates that among the students whose true scores placed them in this classification, 83 percent would be expected to be in this classification when categorized according to their observed scores. Similarly, a consistency value of 0.78 indicates that 78 percent of students with observed scores in the novice level would be expected to score in this classification again if a second, parallel test form were used.

For some testing situations, of greatest concern may be decisions around level thresholds. For example, if a college gave credit to students who achieved an Advanced Placement test score of 4 or 5, but not to students with scores of 1, 2, or 3, one might be interested in the accuracy of the dichotomous decision below-4 versus 4-or-above. For the 2009–10 CRT-Alt, Table L-2 in Appendix L provides accuracy and consistency estimates at each cutpoint as well as false positive and false negative decision rates. (A false positive is the proportion of students whose observed scores were above the cut and whose true scores were below the cut. A false negative is the proportion of students whose observed scores were below the cut and whose true scores were above the cut.)

The above indices are derived from Livingston and Lewis's (1995) method of estimating the accuracy and consistency of classifications. It should be noted that Livingston and Lewis discuss two versions of the accuracy and consistency tables. A standard version performs calculations for forms parallel to the form taken. An "adjusted" version adjusts the results of one form to match the observed score distribution obtained in the data. Table L-1 uses the standard version for two reasons: (1) this "unadjusted" version can be considered a smoothing of the data, thereby decreasing the variability of the results; and (2) for results dealing with the consistency of two parallel forms, the unadjusted tables are symmetrical, indicating that the two parallel forms have the same statistical properties. This second reason is consistent with the notion of forms that are parallel; that is, it is more intuitive and interpretable for two parallel forms to have the same statistical distribution.

Descriptive statistics relating to the decision accuracy and consistency (DAC) of the 2009–10 Montana CRT-Alternate tests can be derived from Table L-1. For mathematics, overall accuracy ranged from 0.70 to 0.85, overall consistency ranged from 0.64 to 0.80, and the kappa statistic ranged from 0.51 to 0.68. For reading, overall accuracy ranged from 0.71 to 0.89, overall consistency ranged from 0.62 to 0.85, and the kappa statistic ranged from 0.34 to 0.72. Finally, for writing, overall accuracy ranged from 0.74 to 0.83, overall consistency ranged from 0.66 to 0.77, and the kappa statistic ranged from 0.37 to 0.64. Note that, as with other methods of evaluating reliability, DAC statistics calculated based on small groups can be expected to be lower than those calculated based on larger groups. For this reason, the values presented in Appendix L

should be interpreted with caution. In addition, it is important to remember that it is inappropriate to compare DAC statistics between grades and content areas.

8.3 GENERALIZABILITY

It is also recommended that OPI consider conducting generalizability studies for each grade and content area. Because the Montana CRT-Alt is administered by individual teachers, in addition to the usual sources of error associated with regular assessments, there is always the question of how well student performance generalizes across occasions. A generalizability study of alternate assessments could include occasion as a facet in addition to rater/administrator and task.

A study specifically designed to examine administrator effects was conducted in 2009–10. A small sample of students was chosen and their test administrations were observed and scored by an independent test administrator. The observers came from a small pool of experienced test administrators who were chosen to participate because they were highly qualified to administer and score the CRT-Alt. Results of this study will provide important information about the extent to which test administration guidelines minimize unwanted score variability due to administrator effects.

Chapter 9. COMPARABILITY

9.1 COMPARABILITY OF SCORES ACROSS YEARS

Because the Montana CRT-Alternate reading, mathematics, and science tests use the same test items and scoring rubrics from year to year, raw scores are, by definition, comparable across years. To enable meaningful reporting, scaled scores on a 200 to 300 score scale are created using a linear transformation of the raw scores; the scaling constants used are shown in Table 9-1. Because the raw scores are consistent across years and the same scaling constants are used each year, comparability of reported scaled scores across years is maintained. Thus, we provide in Appendix N a comparison of the cumulative scaled score distributions for each of the Montana CRT-Alternate tests for the past three administration years.

Table 9-1. 2009-10 MT CRT-Alt: Scaling Constants by Content Area and Grade

Content Area	*Grade*	*Slope*	*Intercept*
Mathematics	3	1.9231	80.7672
	4	1.2500	152.5000
	5	2.7778	24.9982
	6	0.8621	173.2731
	7	0.9259	186.1129
	8	1.3889	154.1659
	10	0.8621	181.0320
Reading	3	0.7353	195.5878
	4	0.9259	178.7057
	5	0.9615	178.8490
	6	1.0000	182.0000
	7	1.3889	168.0549
	8	1.3158	163.1572
	10	1.5625	139.0625
Science	4	1.3158	147.3676
	8	0.9259	182.4093
	10	1.4706	113.2342

9.2 LINKAGES ACROSS GRADES

Comparability across grades was addressed through standard setting procedures. For reading and mathematics, starting cuts were calculated for the grades for which standards were being set by determining a line of best fit to the existing cuts at the other grades and calculating interpolated values for the needed grade levels. Panelists were then asked to validate the interpolated starting cuts. This process enhanced the coherence of the cuts across grade levels.

The raw score cuts established via standard setting and the associated scaled score cuts are presented for each content area and grade in Table 9-2. For the reporting scale, the lower two cuts were set at 225 and 250 and the upper cut was calculated using the scaling constants presented in Table 9-1 above. (Use of this procedure enables a single raw-to-scaled score conversion line for each content area and grade.) The use of

common scaled score cuts for the novice/nearing proficiency and nearing proficiency/proficient cutpoints enhances ease of interpretation of the reporting scale across grade levels. The performance level distributions for the last three years are provided in Appendix O.

Table 9-2. 2009–10 MT CRT-Alt: Raw Score and Scaled Score Cuts by Content Area and Grade

Subject	*Grade*	Raw Score:				Scaled Score:			
		N/NP Cut	*NP/P Cut*	*P/A Cut*	*Minimum*	*N/NP Cut*	*NP/P Cut*	*P/A Cut*	*Maximum*
Mathematics	3	75	88	98	200	225	250	269	300
	4	58	78	93	200	225	250	269	300
	5	72	81	98	200	225	250	297	300
	6	60	89	98	200	225	250	258	300
	7	42	69	96	200	225	250	275	300
	8	51	69	89	200	225	250	278	300
	10	51	80	93	200	225	250	261	300
Reading	3	40	74	95	200	225	250	265	300
	4	50	77	95	200	225	250	267	300
	5	48	74	88	200	225	250	263	300
	6	43	68	93	200	225	250	275	300
	7	41	59	88	200	225	250	290	300
	8	47	66	85	200	225	250	275	300
	10	55	71	92	200	225	250	283	300
Science	4	59	78	96	200	225	250	274	300
	8	46	73	96	200	225	250	271	300
	10	76	93	108	200	225	250	272	300

N=Novice; NP=Nearing Proficiency; P=Proficient; A=Advanced

Chapter 10. REPORTING

The CRT-Alternate assessment was designed to measure student performance against Montana's Content Standards and Expanded Benchmarks. Consistent with this purpose, results from the CRT-Alternate were reported in terms of performance levels that describe student performance in relation to the established state standards. There are four performance levels: *Advanced*, *Proficient*, *Nearing Proficiency*, and *Novice*. (CRT-Alternate performance level descriptors and the performance level cuts on both the raw and scaled-score scales are presented in Appendix B.) Students receive a separate performance-level classification in each content area.

School- and system-level results are reported as the number and percentage of students attaining each performance level at each grade level tested. Disaggregations by student subgroups are also reported at the school and system levels. The CRT-Alternate reports are:

- Student Reports;
- Class Roster & Item-Level Reports;
- School Summary Reports;
- System Summary Reports;
- State Summary Reports.

To establish protocols for handling data discrepancies and data clean-up processes, OPI and Measured Progress collaborated to formulate decision rules in late spring 2010. A copy of these decision rules is included as Appendix R.

State summary results were provided to OPI via a secure Web site. The report formats are included in Appendix O. All reports were made available to system and school administrators via Montana's online reporting system, Montana Analysis and Reporting System (MARS). Student reports were shipped to system test coordinators in September 2010 for distribution to schools within their respective systems/districts. New in 2010 Student reports were also posted online for access by schools. System test coordinators and teachers were also provided with copies of the *Guide to the 2010 criterion-Referenced Test and CRT-Alternate Assessment Reports* to assist them in understanding the connection between the assessment and the classroom. The guide provides information about the assessment and the use of assessment results.

10.1 SUMMARY REPORT (ONLINE)

The summary report is produced at the school, system and state levels. The report is produced for each content area in the grade level. For grades 3,5,6,7 the content areas are Reading and Mathematics. For grades 4,8 and 10 the content areas are Reading, Mathematics and Science. The report consists of the following sections:

- Distribution of Scores
- Subtest Results
- Results for Subgroups of Students

10.1.1 Distribution of Scores

The *Distribution of Scores* section of the report contains a breakdown of the performance of included students (as described in the decision rules document) into different scaled score intervals. The number and percent of students that fall into each scaled score interval is shown. There is an overall percentage reported for students that fall into the one of the four performance levels (*Advanced, Proficient, Nearing Proficiency, and Novice).* In the *School Summary Report,* the calculations are done at the School, system and state levels. The *System Summary Report* contains results at the system and state levels. The *State Summary Report* contains only state level results.

10.1.2 Subtest Results

The *Subtest Results* Section of the report summarizes the average points earned in the different content standards, by included students (as described in the decision rules document) in the school, system and state. The average points earned are compared to the total possible points for each content standard.

10.1.3 Results for Subgroups of Students

The *Results for Subgroups of Students* section of the report summarizes the performance of included students (as described in the decision rules document) broken down by various reporting categories. For each reporting category, the number of tested (included) students is reported as well as the percentage of students in each of the four performance levels. In the *School Summary Report* this is reported at the school, system and state levels. In the *System Summary Report* the data are reported at the system and state levels. In the *State Summary Report* the data are reported at state level only.

- The list of Reporting Categories is as follows:
- All Students
- Gender (Male/Female)
- Ethnicity (American Indian or Alaska native; Asian; Hispanic; Black or African American; Native Hawaiian or Other Pacific Islander; White)
- Special Education
- Students with a 504 Plan
- Title I (optional)

- Migrant
- Gifted/Talented
- LEP/ELL
- Former LEP Student
- LEP Student Enrolled for First Time in a U.S. School (the percentage of students in each of the four performance levels is not reported for this subgroup of students)
- Free/Reduced Lunch

Data are suppressed if there are less than ten tested (included) in a reporting category at that aggregation level.

The data for the reporting categories were provided by information coded on the students' answer booklets by teachers and/or data supplied by the state through an AIM export. Due to relatively low numbers of students in certain reporting categories, school personnel are advised, under FERPA guidelines, to treat these pages confidentially.

10.1.4 Roster and Item Level Report

The Montana CRT-Alternate *Roster and Item-Level Report* provides a list of all students in a school/class and provides performance on the items. There is one report per content area. The student's names and identification numbers are listed as row headers down the left side of the report. The items are listed as column headers. For each item, the following are shown:

- Content standard
- Tasklet number
- Total possible points

For each student the score for each item is reported. The columns on the right side of the report show the Total test results, broken into several categories. Subcategory Points Earned columns show points earned by the student in each content area subcategory relative to total possible points. A Total Points Earned column is a summary of all points earned and total possible points in the content area. The last two columns show the student's scaled score and Performance level.

The Montana CRT-Alternate *Roster and Item-Level Report* is confidential and should be kept secure within the school and district, FERPA requires that access to individual student results be restricted to the student, the student's parents/guardians, and authorized school personnel.

10.2 DECISION RULES

To ensure that reported results for the 2009-10 Montana CRT-Alt are accurate relative to collected data and other pertinent information, a document that delineates analysis and reporting rules was created. These decision rules were observed in the analyses of Montana CRT-Alt test data and in reporting the test results. Moreover, these rules are the main reference for quality assurance checks.

The decision rules document used for reporting results of the 2010 administration of the Montana CRT-Alt is found in Appendix P.

The rules primarily describe the inclusion/exclusion of students at the school-, system- and state-levels of aggregations. The document also describes rules as they pertain to individual reports and the classification of students based on their school type or other information provided by the state through the student demographic file (AIM) or collected on the student's Answer booklet.

10.3 QUALITY ASSURANCE

Quality assurance measures are embedded throughout the entire process of analysis and reporting. The data processor, data analyst, and psychometrician assigned to work on Montana CRT-Alt implement quality control checks of their respective computer programs and intermediate products. Moreover, when data are handed off to different functions within the Data Services and Static Reporting (DSSR) and Psychometrics and Research (P&R) departments, the sending functions verifies that the data are accurate before handoff. Additionally, when a function receives a data set, the first step is to verify the data for accuracy.

Another type of quality assurance measure is parallel processing. Different exclusions that determine whether each student receives scaled scores and/or is included in different levels of aggregation are parallel processed. Using the decision rules document, two data analysts independently write a computer program that assigns students' exclusions. For each content area and grade combination, the exclusions assigned by each data analyst are compared across all students. Only when 100% agreements is achieved can the rest of data analysis be completed.

Another level of quality assurance involves the procedures implemented by the quality assurance group to check the accuracy of reported data. Using a sample of schools and systems, the quality assurance group verifies that reported information is correct. The step is conducted in two parts: (1) verify that the computed information was obtained correctly through appropriate application of different decision rules, and (2) verify that the correct data points populate each cell in the Montana CRT-Alt reports. The selection of sample schools and systems for this purpose is very specific and can affect the success of the quality control efforts. There are two sets of samples selected that may not be mutually exclusive.

- The first set includes those that satisfy the following criteria:

- One-school system
- Two-school system
- Multi-school system

The second set of samples includes systems or schools that have unique reporting situations as indicated by the decision rules. This second set is necessary to ensure that each rule is applied correctly. The second set includes the following criteria:

- Private school
- School with excluded (not tested) students

The quality assurance group uses a checklist to implement its procedures. After the checklist is completed, sample reports are circulated for psychometric checks and program management review.

Chapter 11. VALIDITY

The purpose of this report is to describe several technical aspects of the CRT-Alternate in an effort to contribute to the accumulation of validity evidence to support CRT-Alternate score interpretations. Because it is a combination of a test and its scores that are evaluated for validity, not just the test itself, this report presents documentation to substantiate intended interpretations (AERA, 1999). Each of the chapters in this report contributes important information to the validity argument by addressing one or more of the following aspects of the CRT-Alternate: test development, test administration, scoring, item analyses, reliability, performance levels, and reporting.

The CRT-Alternate assessments are based on, and aligned to, Montana's Content Standards and Expanded Benchmarks in reading, mathematics and science. The CRT-Alternate results are intended to provide inferences about student achievement on Montana's reading, mathematics and science Content Standards and Expanded Benchmarks, and these achievement inferences are meant to be useful for program and instructional improvement and as a component of school accountability.

Standards for Educational and Psychological Testing (AERA, 1999) provides a framework for describing sources of evidence that should be considered when constructing a validity argument. These sources include evidence based on the following five general areas: test content, response processes, internal structure, relationship to other variables, and consequences of testing. Although each of these sources may speak to a different *aspect* of validity, they are not distinct *types* of validity. Instead, each contributes to a body of evidence about the comprehensive validity of score interpretations.

11.1 EVIDENCE BASED ON TEST DEVELOPMENT AND STRUCTURE

A measure of test content validity is to determine how well the assessment tasks represent the curriculum and standards for each content area and grade level. This is informed by the item development process, including how the test blueprints and test items align to the curriculum and standards. Viewed through this lens provided by the content standards, evidence based on test content was extensively described in chapters 3 and 4. Item alignment with Montana content standards; item bias, sensitivity, and content appropriateness review processes; and adherence to the test blueprint are all components of validity evidence based on test content. As discussed earlier, all CRT-Alternate test questions are aligned by Montana educators to specific Montana content standards and undergo several rounds of review for content fidelity and appropriateness.

Evidence based on internal structure is presented in the discussions of item analyses and reliability in chapters 7 and 8. Technical characteristics of the internal structure of the assessments are presented in terms of classical item statistics (item difficulty, item-test correlation) and reliability coefficients. In general, indices were within the ranges expected.

11.2 OTHER EVIDENCE

The training and administration information in chapters 5 and 6 describes the steps taken to train the teachers/test administrators on administration and scoring procedures. Tests are administered according to state-mandated standardized procedures, and all test administrators are required to review the training CD. These efforts to provide thorough training opportunities and materials help maximize consistency of administration and scoring across teachers which enhances the quality of test scores and, in turn, contributes to validity.

Evidence on the consequences of testing is addressed in the reporting information provided in chapter 10. This chapter speaks to efforts undertaken to provide the public with accurate and clear test score information. Performance levels give reference points for mastery at each grade level, a useful and simple way to interpret scores. Several different standard reports were provided to stakeholders.

11.3 FUTURE DIRECTIONS

To further support the validity argument, additional studies to provide evidence regarding the relationship of CRT-Alternate results to other variables might include the extent to which scores from the CRT-Alternate assessments converge with other measures of similar constructs, and the extent to which they diverge from measures of different constructs. Relationships among measures of the same or similar constructs can sharpen the meaning of scores and appropriate interpretations by refining the definition of the construct.

The evidence presented in this report supports inferences of student achievement on the content represented in the Montana content standards for reading, mathematics, and science for the purposes of program and instructional improvement and as a component of school accountability.

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APPENDICES

Appendix A—Performance Level Descriptors

Alternate Performance Level Descriptors for Grade 3 Reading

Advanced	The student at the Advanced level accurately and independently demonstrates the ability to carry out comprehensive content-specific performance indicators. ▪ follows three-step or more directions ▪ chooses correct choice among the 4 options correctly ▪ asks for clarification/help if needed ▪ gives full attention to literacy materials/selection ▪ communicates using expanded vocabulary ▪ correctly answers who, what, and where questions and contributes own thoughts/ideas ▪ is able to generalize information from one setting to another ▪ responds with a complete thought ▪ recognizes and articulates the main idea
Proficient	The student at the Proficient level, given limited prompting, demonstrates the ability to respond accurately in performing a wide variety of content-specific performance indicators. ▪ follows two-step directions ▪ attends fully to the activity ▪ contributes/elaborates on the response ▪ shows independence/confidence ▪ chooses correctly among three options (verbal, pictures, touch, other stimuli) ▪ participates actively ▪ understands what he/she is doing ▪ cooperates with the administrator ▪ addresses responses with Yes or No ▪ communicates and demonstrates words he/she knows and asks for clarification if needed ▪ attends long enough to complete a given task ▪ attempts to answer what and where questions
Nearing Proficiency	The student at the Nearing Proficiency level, given moderate prompting, demonstrates the ability to respond accurately in performing a narrow set of content-specific performance indicators. ▪ explores literary items (holds book in correct position, recognizes pictures vs. print, uses left to right orientation) ▪ attends with support easily ▪ begins to respond to literacy with varied prompts ▪ responds to others ▪ holds eye contact ▪ begins to communicate with a purpose ▪ communicates the correct choice between two options ▪ follows one-step direction consistently
Novice	The student at the Novice level, given physical assistance and/or modeling, is supported to participate in content-specific performance indicators. ▪ anticipates a reading activity ▪ attends to materials being displayed ▪ responds to own name ▪ attends for a short period of time ▪ begins/attempts to participate with supports ▪ attempts to communicate

Alternate Performance Level Descriptors for Grade 3 Mathematics

Advanced	The student at the Advanced level accurately and independently demonstrates the ability to carry out comprehensive content-specific performance indicators. ▪ creates a repeating pattern using objects, shapes, designs, or numbers ▪ carries out a strategy to solve problems involving patterns, relations, or functions ▪ recognizes two-dimensional shapes ▪ carries out a strategy to solve a geometric problem ▪ determines which of two numbers is closer to the quantity in a given set ▪ uses methods and tools to solve a problem, including drawing pictures, modeling with objects, estimating, using paper and pencil, and using a calculator ▪ identifies a reasonable quantity when guessing the amount of a given set
Proficient	The student at the Proficient level, given limited prompting, demonstrates the ability to respond accurately in performing a wide variety of content-specific performance indicators. ▪ extends and explains an alternating pattern of two or more objects, shapes, designs, or numbers ▪ shows a quantity ▪ extends or supplies a missing element in a repeating pattern by attribute or number ▪ reproduces an alternating pattern of two or more objects, shapes, designs, or numbers ▪ recognizes properties of two-dimensional shapes ▪ uses a quantitative label when making a guess ▪ touches and moves shapes toward creating new shapes
Nearing Proficiency	The student at the Nearing Proficiency level, given moderate prompting, demonstrates the ability to respond accurately in performing a narrow set of content-specific performance indicators. ▪ demonstrates an understanding that numbers, as opposed to letters, are used to express quantity, order, or size/amount ▪ counts with another person ▪ identifies/names shapes as circles, squares, triangles, rectangles, and ovals ▪ matches two-dimensional physical shapes to pictures of the shapes in different orientations ▪ explains/shows spatial reasoning ▪ finds various shapes in the environment ▪ enters numbers correctly on a calculator/writes (communicates) numbers correctly
Novice	The student at the Novice level, given physical assistance and/or modeling, is supported to participate in content-specific performance indicators. ▪ anticipates a math activity ▪ attends to materials being displayed ▪ attends to another person combining and subdividing shapes ▪ attends to another person making patterns and to a person describing patterns ▪ attends to a person demonstrating with concrete materials ▪ attends to objects or pictures of two- and three-dimensional geometric shapes and the relationships among them ▪ attends to another person estimating an amount of a given set

Alternate Performance Level Descriptors for Grade 4 Reading

Advanced	The student at the Advanced level accurately and independently demonstrates the ability to carry out comprehensive content-specific performance indicators. ▪ consistently and independently arrives at correct answer ▪ follows three -step or more directions ▪ may read independently ▪ communicates knowledge using expanded vocabulary ▪ communicates a complete thought related to topic or concept ▪ correctly answers who, what, when, and where questions ▪ is able to generalize information from one setting to another ▪ recognizes and articulates the main idea ▪ relates and uses relevant knowledge to make connections
Proficient	The student at the Proficient level, given limited prompting, demonstrates the ability to respond accurately in performing a wide variety of content-specific performance indicators. ▪ arrives at correct answer with limited prompting ▪ follows two-step directions ▪ communicates knowledge of basic vocabulary and familiar words ▪ demonstrates written words have meaning ▪ explores pictures, symbols, and objects ▪ answers yes and no questions ▪ identifies beginning main idea ▪ uses literacy materials appropriately ▪ contributes/elaborates on responses
Nearing Proficiency	The student at the Nearing Proficiency level, given moderate prompting, demonstrates the ability to respond accurately in performing a narrow set of content-specific performance indicators. ▪ arrives at correct answer with moderate prompting ▪ follows one-step directions consistently ▪ understands when response is needed ▪ needs multiple redirection to the test material to respond to a specific item ▪ explores literary items (holds reading material in correct position, recognizes pictures vs. print, uses left to right orientation) ▪ begins to respond to literacy with varied prompts ▪ uses prior knowledge to demonstrate knowledge of basic vocabulary ▪ begins to communicate with a purpose
Novice	The student at the Novice level, given physical assistance and/or modeling, is supported to participate in content-specific performance indicators. ▪ requires high level of prompting/physical assistance to arrive at correct answer ▪ may anticipate a reading activity ▪ responds to own name ▪ attempts to communicate ▪ attends for short periods of time to the teacher, materials, and test items ▪ attends to pictures, symbols, and objects when presented ▪ begins/attempts to participate with support

Alternate Performance Level Descriptors for Grade 4 Mathematics

Advanced	The student at the Advanced level accurately and independently demonstrates the ability to carry out comprehensive content-specific performance indicators. ▪ consistently and independently arrives at correct answer ▪ extends a repeating pattern using objects, shapes, designs, or numbers ▪ uses methods and tools to solve a problem involving patterns, relations, or functions ▪ sets up a graph (i.e., labels axes) ▪ carries out a strategy to solve problems involving patterns, relations, or functions ▪ determines which of two numbers is closer to the quantity in a given set ▪ understands and uses comparison words (more, less, some, none) ▪ demonstrates reasoning about probability items ▪ understands words that indicate operations in word problems
Proficient	The student at the Proficient level, given limited prompting, demonstrates the ability to respond accurately in performing a wide variety of content-specific performance indicators. ▪ arrives at correct answer with limited prompting understands the concept of 1:1 correspondence ▪ sorts objects into sets ▪ understands comparison words (more, less, some, none) ▪ extends or supplies a missing element in a repeating pattern by attribute or number ▪ reads a simple graph ▪ demonstrates a basic understanding of math skills, concepts, and vocabulary
Nearing Proficiency	The student at the Nearing Proficiency level, given moderate prompting, demonstrates the ability to respond accurately in performing a narrow set of content-specific performance indicators. ▪ arrives at correct answer with moderate prompting ▪ understands the concept of "1" ▪ may recognize a simple pattern ▪ demonstrates an understanding that numbers, as opposed to letters, are used to express quantity, order, or size/amount ▪ counts with another person ▪ may recognize quantities ▪ identifies basic shapes (i.e., circles, squares, triangles, and rectangles) and the relationships among them ▪ matches two-dimensional physical shapes to pictures of the shapes in different orientations ▪ may communicate some numbers correctly
Novice	The student at the Novice level, given physical assistance and/or modeling, is supported to participate in content-specific performance indicators. ▪ requires high level of prompting/physical assistance to arrive at correct answer ▪ may anticipate a math activity ▪ attends to materials being displayed ▪ attends to another person making patterns and to a person describing patterns ▪ attends to a person demonstrating with concrete materials ▪ attends to objects or pictures of two- and three-dimensional geometric shapes ▪ attends to another person estimating an amount of a given set

Alternate Performance Level Descriptors for Grade 4 Science

Advanced	The student at the Advanced level accurately and independently demonstrates the ability to carry out comprehensive content-specific performance indicators. ▪ ability to independently attend, compare/contrast, sort/categorize, recognize, identify ▪ understands content at higher level ▪ consistent high scores ▪ minimal scaffolding
Proficient	The student at the Proficient level, given limited prompting, demonstrates the ability to respond accurately in performing a wide variety of content-specific performance indicators. ▪ ability to attend ▪ ability to recognize and identify with minimal assistance ▪ ability to compare/contrast and sort/categorize with minimal assistance ▪ occasional scaffolding
Nearing Proficiency	The student at the Nearing Proficiency level, given moderate prompting, demonstrates the ability to respond accurately in performing a narrow set of content-specific performance indicators. ▪ attending with some assistance ▪ ability to recognize and identify with some assistance ▪ moderate to heavy scaffolding
Novice	The student at the Novice level, given physical assistance and/or modeling, is supported to participate in content-specific performance indicators. ▪ limited to no attending skills ▪ minimal recognition and identification skills ▪ maximum scaffolding required ▪ consistently low scores

Alternate Performance Level Descriptors for Grade 5 Reading

Advanced	The student at the Advanced level accurately and independently demonstrates the ability to carry out comprehensive content-specific performance indicators. ▪ relates and uses relevant prior knowledge to make connections ▪ uses pictures, symbols, and objects independently in problem solving ▪ responds to test materials to respond to a specific item ▪ gives correct response among four options ▪ orients text and reads independently and with teacher ▪ communicates the correct choice with multiple options ▪ responds to basic comprehension questions ▪ sounds out unfamiliar words using phonics
Proficient	The student at the Proficient level, given limited prompting, demonstrates the ability to respond accurately in performing a wide variety of content-specific performance indicators. ▪ relates prior knowledge accurately and appropriately ▪ explores pictures, symbols, and objects ▪ needs occasional redirection to the test materials to respond to a specific item ▪ responds to test materials to respond to a specific item ▪ orients text and uses text with limited prompting ▪ communicates the correct choice among three options ▪ responds to basic comprehension questions given three options ▪ sounds out unfamiliar words using phonics with assistance
Nearing Proficiency	The student at the Nearing Proficiency level, given moderate prompting, demonstrates the ability to respond accurately in performing a narrow set of content-specific performance indicators. ▪ understands when response is needed ▪ displays knowledge of front/back, right side up, page turning and scanning of literacy materials with prompting ▪ communicates the correct choice between two options ▪ explores pictures, symbols, and objects when prompted ▪ needs multiple redirection to the test material to respond to a specific item ▪ relates prior knowledge to present situation ▪ sounds out unfamiliar words using limited phonemic knowledge ▪ responds to basic comprehension questions using yes or no
Novice	The student at the Novice level, given physical assistance and/or modeling, is supported to participate in content-specific performance indicators. ▪ anticipates a reading activity ▪ attends to materials being displayed ▪ explores pictures, symbols, and objects with teacher assistance ▪ responds when given modeling and supports ▪ recognizes phonemic correspondence when modeled ▪ attends and acknowledges literacy activities

Alternate Performance Level Descriptors for Grade 5 Mathematics

Advanced	The student at the Advanced level accurately and independently demonstrates the ability to carry out comprehensive content-specific performance indicators. ▪ recognizes 0–100 independently ▪ requires no clarification or prompts ▪ demonstrates mastery of basic math concepts ▪ demonstrates mastery of math vocabulary ▪ solves problems using addition & subtraction ▪ uses measurement tools ▪ responds to test questions
Proficient	The student at the Proficient level, given limited prompting, demonstrates the ability to respond accurately in performing a wide variety of content-specific performance indicators. ▪ recognizes 0–100 ▪ discriminates correctly among three choices ▪ begins to understand words that indicate operations in word problems ▪ demonstrates a basic understanding of sequencing ▪ demonstrates a basic understanding of math skills ▪ demonstrates a basic understanding of math concepts and vocabulary
Nearing Proficiency	The student at the Nearing Proficiency level, given moderate prompting, demonstrates the ability to respond accurately in performing a narrow set of content-specific performance indicators. ▪ demonstrates a limited understanding of math concepts ▪ demonstrates a limited understanding of math vocabulary ▪ demonstrates a limited ability to generalize ▪ demonstrates a limited ability to master a specific task in a specific environment ▪ uses patterns to copy concrete patterns using manipulatives ▪ recognizes digits 0–20 ▪ demonstrates 1:1 correspondence ▪ demonstrates single-digit addition (i.e., less than 9)
Novice	The student at the Novice level, given physical assistance and/or modeling, is supported to participate in content-specific performance indicators. ▪ anticipates a math activity ▪ attends to materials being displayed ▪ demonstrates an understanding of the concepts of some/more/less/take away/all gone/no more ▪ selects the appropriate tool to be used in making a measure

Alternate Performance Level Descriptors for Grade 6 Reading

Advanced	The student at the Advanced level accurately and independently demonstrates the ability to carry out comprehensive content-specific performance indicators. ▪ orients text and reads independently or with teacher ▪ communicates the correct choice with multiple options ▪ uses diagrams and models to understand text independently ▪ creates diagrams and charts to show understanding of text ▪ relates text to appropriate personal experiences ▪ identifies meaning of unfamiliar words using context clues ▪ responds to basic questions about plot outcome ▪ demonstrates basic understanding of main ideas and some supporting details ▪ recognizes diverse perspectives
Proficient	The student at the Proficient level, given limited prompting, demonstrates the ability to respond accurately in performing a wide variety of content-specific performance indicators. ▪ orients and uses text ▪ communicates the correct choice among three options ▪ uses diagrams and models to understand text with limited prompting ▪ creates diagrams and charts to show understanding of text ▪ relates text to appropriate personal experiences ▪ identifies meaning of unfamiliar words using context clues ▪ responds to basic questions about plot outcome ▪ demonstrates basic understanding of main ideas and some supporting details ▪ recognizes diverse perspectives
Nearing Proficiency	The student at the Nearing Proficiency level, given moderate prompting, demonstrates the ability to respond accurately in performing a narrow set of content-specific performance indicators. ▪ understands when response is needed ▪ displays knowledge of front/back, right side up, page turning and scanning of literacy materials with prompting ▪ communicates the correct choice between two options ▪ uses diagrams and models to understand text ▪ creates diagrams and charts to show understanding of text ▪ relates text to personal experiences ▪ identifies meaning of unfamiliar words using context clues ▪ responds to basic questions about plot ▪ demonstrates basic understanding of main ideas and some supporting details ▪ recognizes diverse perspectives
Novice	The student at the Novice level, given physical assistance and/or modeling, is supported to participate in content-specific performance indicators. ▪ anticipates a reading activity ▪ attends to materials being displayed ▪ orients text ▪ acknowledges correct choice ▪ attends to teacher-created diagrams and models to understand text ▪ connects text to personal experience only with teacher guidance ▪ acknowledges and attends to literacy activity

Alternate Performance Level Descriptors for Grade 6 Mathematics

Advanced	The student at the Advanced level accurately and independently demonstrates the ability to carry out comprehensive content-specific performance indicators. ▪ demonstrates mastery understanding of abstract math concepts and skills ▪ demonstrates mastery of telling time to the one half hour and hour and applies the concepts of time ▪ demonstrates mastery of the ability to perform visual/spatial reasoning ▪ demonstrates mastery of the ability to sequence numbers and/or patterns ▪ demonstrates mastery of the understanding and use of math vocabulary ▪ consistently demonstrates the ability to generalize knowledge and skills to different environments
Proficient	The student at the Proficient level, given limited prompting, demonstrates the ability to respond accurately in performing a wide variety of content-specific performance indicators. ▪ discriminates correctly among three choices ▪ demonstrates a basic understanding of abstract math concepts and skills (addition and subtraction) ▪ tells time to the one half hour and hour and applies concepts of time ▪ demonstrates a basic ability to perform visual/spatial reasoning with minimal prompts ▪ demonstrates a basic understanding of sequencing ▪ student demonstrates a basic understanding of and the ability to use math vocabulary ▪ demonstrates the ability to generalize knowledge and skills to different environments and with some supports
Nearing Proficiency	The student at the Nearing Proficiency level, given moderate prompting, demonstrates the ability to respond accurately in performing a narrow set of content-specific performance indicators. ▪ responds accurately when choosing between two answers ▪ demonstrates a limited understanding of abstract math concepts and skills ▪ demonstrates a limited ability to tell time or apply the concepts of time ▪ demonstrates a limited ability to perform visual/spatial reasoning ▪ requires concrete manipulatives when creating a pattern ▪ demonstrates a limited understanding of math vocabulary ▪ demonstrates a limited ability to generalize knowledge and skills to different environments
Novice	The student at the Novice level, given physical assistance and/or modeling, is supported to participate in content-specific performance indicators. ▪ anticipates a math activity ▪ attends to materials being displayed ▪ demonstrates the ability to cover a figure with shapes ▪ produces a numeral to 10

Alternate Performance Level Descriptors for Grade 7 Reading

Advanced	The student at the Advanced level accurately and independently demonstrates the ability to carry out comprehensive content-specific performance indicators. ▪ makes inferences ▪ sequences beginning, middle, and end and supporting details (specific facts) ▪ differentiates between fact and opinion ▪ understands abstract vocabulary (true/false) ▪ identifies/understands various genre (i.e., cultural lessons, informational, fables/myths, biographies) ▪ understands story lessons/author's purpose ▪ identifies chapter heading (abstract sense) to find/use info ▪ uses reading strategies to gain information (i.e., rereading, use of key words, use of features of text)
Proficient	The student at the Proficient level, given limited prompting, demonstrates the ability to respond accurately in performing a wide variety of content-specific performance indicators. ▪ demonstrates readiness with limited/no prompting ▪ sequences beginning, middle, and end ▪ recalls multiple facts about a reading selection ▪ understands literal vocabulary and the relationships ▪ identifies main idea of the story and some supporting facts/details ▪ identifies purposes of various texts (i.e., map, dictionary, bus schedule, etc.) ▪ identifies title and basic parts of a book ▪ responds with three response options
Nearing Proficiency	The student at the Nearing Proficiency level, given moderate prompting, demonstrates the ability to respond accurately in performing a narrow set of content-specific performance indicators. ▪ demonstrates readiness by following one-step directions or with teacher modeling/prompting ▪ identifies an object and its function ▪ maintains focus from beginning to end ▪ understands story beginning and ending ▪ understands basic main idea (answer with one picture/short response) ▪ recalls at least one fact about a reading selection ▪ locates name of book and basic print awareness ▪ responds mostly through basic yes/no questions or with two options (or three options with further teacher clarification)
Novice	The student at the Novice level, given physical assistance and/or modeling, is supported to participate in content-specific performance indicators. ▪ anticipates a reading activity ▪ attends to materials being displayed ▪ directs attention to external stimuli when requested (i.e., turns head in direction, sits quietly, etc.) ▪ interacts with stimuli ▪ responds to external stimuli (i.e., nods head, operates switch, points to, etc.) ▪ is assisted through a correct response ▪ attempts to participate in activity ▪ has general awareness of people and activity ▪ responds to own name ▪ responds to words, pictures and symbols

Alternate Performance Level Descriptors for Grade 7 Mathematics

Advanced	The student at the Advanced level accurately and independently demonstrates the ability to carry out comprehensive content-specific performance indicators. ▪ engaged in the task ▪ understands 1:1 correspondence ▪ adds/counts money ▪ graphs ▪ sorts and makes decisions based on sorting
Proficient	The student at the Proficient level, given limited prompting, demonstrates the ability to respond accurately in performing a wide variety of content-specific performance indicators. ▪ identifies coins and values ▪ sorts objects by function ▪ makes comparisons (>,<) ▪ makes a statement about the data ▪ adds and subtracts
Nearing Proficiency	The student at the Nearing Proficiency level, given moderate prompting, demonstrates the ability to respond accurately in performing a narrow set of content-specific performance indicators. ▪ knows 1:1 correspondence, concept of "none" ▪ understands the concept addition (more) ▪ understands the concept subtraction (less) ▪ matches coins ▪ sorts by appearance, various (two or more) characteristics (size, shape, color)
Novice	The student at the Novice level, given physical assistance and/or modeling, is supported to participate in content-specific performance indicators. ▪ anticipates a math activity ▪ attends to materials being displayed ▪ attends to models/prompts ▪ recognizes numbers (symbol or rote recitation) ▪ sorts by one characteristic

Alternate Performance Level Descriptors for Grade 8 Reading

Advanced	The student at the Advanced level accurately and independently demonstrates the ability to carry out comprehensive content-specific performance indicators. ▪ consistently and independently arrives at correct answer ▪ connects prior knowledge to make meaning of text ▪ identifies main idea and various supporting details ▪ understands story lessons ▪ locates title and other information from a variety of documents/sources ▪ recognizes vowel letter-sound ▪ uses reading and/or listening strategies when needed to gain information (i.e., rereading, use of key words, use of features of text) ▪ comprehends a simple paragraph
Proficient	The student at the Proficient level, given limited prompting, demonstrates the ability to respond accurately in performing a wide variety of content-specific performance indicators. ▪ arrives at correct answer with limited prompting ▪ has basic word recognition ▪ tracks while reading or being read to ▪ identifies basic words and recognizes some words in different contexts ▪ identifies a word/picture/symbol for content communication ▪ identifies title and basic parts (beginning, middle, and end) of a reading selection ▪ identifies main idea of a story and some supporting facts/details ▪ identifies purposes of various texts (i.e., dictionary, map)
Nearing Proficiency	The student at the Nearing Proficiency level, given moderate prompting, demonstrates the ability to respond accurately in performing a narrow set of content-specific performance indicators. ▪ arrives at correct answer with moderate prompting ▪ requires a high level of rephrasing ▪ shows an understanding of the beginning and end of a story by giving attention to the reader or the text ▪ recognizes that letters have names and is aware of letter sounds ▪ recognizes difference between letters and other symbols (i.e., numerals) ▪ identifies letters by name/sign ▪ explores literary items (holds reading material in correct position, recognizes pictures vs. print, uses left to right orientation) ▪ identifies a word/picture/object of familiar places and people ▪ responds mostly through basic yes/no questions ▪ understands basic main idea (answer with one picture/short response)
Novice	The student at the Novice level, given physical assistance and/or modeling, is supported to participate in content-specific performance indicators. ▪ requires high level of prompting/physical assistance to arrive at correct answer ▪ anticipates a reading activity ▪ attends to materials being displayed ▪ demonstrates readiness by following one-step directions or with teacher modeling/prompting ▪ responds to name, words, pictures, and symbols ▪ directs attention and responds to external stimuli when requested (i.e., turns head in direction, nods head, operates switch, points to, etc.) ▪ interacts with stimuli (i.e., teacher, words, pictures, and symbols)

Alternate Performance Level Descriptors for Grade 8 Mathematics

Advanced	The student at the Advanced level accurately and independently demonstrates the ability to carry out comprehensive content-specific performance indicators. ▪ consistently and independently arrives at correct answer ▪ measures to the inch ▪ measures the distance between two points on a map ▪ completes missing components in basic number sentence ▪ recognizes and understands all operational symbols (+, –, =), measurement symbols (in., cm, etc), monetary symbols ($), and time ▪ uses all comparison words (more, less, some, none, most, least) correctly ▪ understands ordinal numbers beyond 3rd ▪ selects the correct label for a graph (i.e., label axis) ▪ explains conclusions drawn from graph ▪ applies beginning connections between concrete and symbolic representations, operations, measurement, graphing and problem solving strategies
Proficient	The student at the Proficient level, given limited prompting, demonstrates the ability to respond accurately in performing a wide variety of content-specific performance indicators. ▪ arrives at correct answer with limited prompting ▪ reads simple measurements ▪ can subtract single digits ▪ understands first three ordinal numbers (1st, 2nd, 3rd) ▪ uses some comparison words (more, less, some, none, most, least) correctly ▪ understands numbers can represent monetary amounts, measurement, and time ▪ demonstrates basic problem solving skills ▪ fills in data, as directed, to create a representation on a bar graph ▪ recognizes and understands most operational symbols (+, –, =), measurement symbols (in., cm, etc), monetary symbols ($), and time ▪ identifies places on a map ▪ answers questions about a bar graph ▪ makes a statement about data ▪ demonstrates knowledge of basic number sentences
Nearing Proficiency	The student at the Nearing Proficiency level, given moderate prompting, demonstrates the ability to respond accurately in performing a narrow set of content-specific performance indicators. ▪ arrives at correct answer with moderate prompting ▪ identifies and/or recognizes a map and measuring tools ▪ demonstrates solid number concept for 1:1 correspondence (consistently touch counts) can count single digits ▪ can add single digits ▪ recognizes and understands some operational symbols (+, –, =), measurement symbols (in., cm, etc), and monetary symbols ($) ▪ basic understanding of bar graphs and data can make general statements about a bar graph
Novice	The student at the Novice level, given physical assistance and/or modeling, is supported to participate in content-specific performance indicators. ▪ requires high level of prompting/physical assistance to arrive at correct answer ▪ anticipates a math activity ▪ attends to materials being displayed ▪ attends to another person reviewing a map with prompting ▪ attends to another person reviewing a graph with prompting ▪ engages with instructor with prompts ▪ recognizes numbers (symbol or rote recitation)

Alternate Performance Level Descriptors for Grade 8 Science

Advanced	The student at the Advanced level accurately and independently demonstrates the ability to carry out comprehensive content-specific performance indicators. ▪ independently attends ▪ no scaffolding on most items ▪ best answer majority of the time ▪ shows understanding of content most of the time
Proficient	The student at the Proficient level, given limited prompting, demonstrates the ability to respond accurately in performing a wide variety of content-specific performance indicators. ▪ can attend ▪ when difficult distracters are reworded, student will answer correctly ▪ identifies correct answer out of three choices most of the time
Nearing Proficiency	The student at the Nearing Proficiency level, given moderate prompting, demonstrates the ability to respond accurately in performing a narrow set of content-specific performance indicators. ▪ can attend ▪ identifies correct answer out of two choices most of the time ▪ guess level performance ▪ limited understanding of content
Novice	The student at the Novice level, given physical assistance and/or modeling, is supported to participate in content-specific performance indicators. ▪ requires assistance to select correct response with maximum scaffolding

Alternate Performance Level Descriptors for Grade 10 Reading

Advanced	The student at the Advanced level accurately and independently demonstrates the ability to carry out comprehensive content-specific performance indicators. ▪ consistently and independently arrives at correct answer ▪ identifies main idea and supporting details from various reading selections ▪ identifies appropriate resources for gaining specific information ▪ draws conclusions from a variety of texts (i.e., poem, fiction) ▪ communicates meaning of new and unfamiliar vocabulary ▪ communicates a complete thought related to topic or concept ▪ uses word-recognition skills, context clues, and prior knowledge to understand text ▪ rereads to gain understanding
Proficient	The student at the Proficient level, given limited prompting, demonstrates the ability to respond accurately in performing a wide variety of content-specific performance indicators. ▪ arrives at correct answer with limited prompting ▪ has basic reading and comprehension skills ▪ understands difference between various literacy materials ▪ begins to access prior knowledge to understand text ▪ communicates a basic thought on topic ▪ identifies main ideas and some supporting details/facts ▪ is beginning to identify appropriate resources for gaining specific information ▪ identifies words/pictures/symbols and objects that are new and unfamiliar
Nearing Proficiency	The student at the Nearing Proficiency level, given moderate prompting, demonstrates the ability to respond accurately in performing a narrow set of content-specific performance indicators. ▪ arrives at correct answer with moderate prompting ▪ explores literary items (holds reading material in correct position, recognizes pictures vs. print, uses left to right orientation) ▪ able to match and identify familiar words/pictures/symbols/objects ▪ identifies basic main idea (answers with one picture/short response) ▪ communicates an opinion ▪ identifies familiar literary resources (i.e., newspaper, CDs, Internet, oral histories)
Novice	The student at the Novice level, given physical assistance and/or modeling, is supported to participate in content-specific performance indicators. ▪ requires high level of prompting/physical assistance to arrive at correct answer ▪ attends to materials being displayed ▪ responds to name, words, pictures and symbols ▪ demonstrates readiness by following one-step directions or with teacher modeling/prompting ▪ directs attention and responds to external stimuli when requested (i.e., turns head in direction, nods head, operates switch, points to, etc.) ▪ interacts with stimuli (i.e., teacher, words, pictures, and symbols)

Alternate Performance Level Descriptors for Grade 10 Mathematics

Advanced	The student at the Advanced level accurately and independently demonstrates the ability to carry out comprehensive content-specific performance indicators. ▪ consistently and independently arrives at correct answer ▪ generalizes very basic information ▪ completes two to three-step processes of addition and subtraction ▪ completes basic division and multiplication problem ▪ applies beginning connections between concrete and symbolic representations by using a chart/table to draw conclusions ▪ creates graph/tables and explains conclusions drawn from graph ▪ understands and communicates relationship between variables ▪ solves problems using bills and their values ▪ follows navigational directions and recalls shapes and locations
Proficient	The student at the Proficient level, given limited prompting, demonstrates the ability to respond accurately in performing a wide variety of content-specific performance indicators. ▪ arrives at correct answer with limited prompting ▪ completes and/or extends basic patterns of data ▪ sorts items into sets by multiple defining characteristics ▪ demonstrates basic connections between concrete and symbolic representations ▪ identifies basic information from a graph/chart ▪ matches bills and their values ▪ recognizes and identifies two-dimensional shapes ▪ chooses correct procedures to solve simple number problems ▪ adds and subtracts two-digit numbers
Nearing Proficiency	The student at the Nearing Proficiency level, given moderate prompting, demonstrates the ability to respond accurately in performing a narrow set of content-specific performance indicators. ▪ arrives at correct answer with moderate prompting ▪ recognizes properties of limited (square/circle) two-dimensional shapes ▪ recognizes distinct categories ▪ recognizes basic patterns of data ▪ sorts items into sets by one defining characteristic ▪ understands quantity ▪ can count single digits ▪ can add/subtract single digits ▪ communicates beginning connections between concrete and symbolic representations
Novice	The student at the Novice level, given physical assistance and/or modeling, is supported to participate in content-specific performance indicators. ▪ requires high level of prompting/physical assistance to arrive at correct answer ▪ attends to materials being displayed ▪ shows limited understanding of quantity when given two choices ▪ recognizes numbers (symbol or rote recitation)

Alternate Performance Level Descriptors for Grade 10 Science

Advanced	The student at the Advanced level accurately, independently, and consistently demonstrates the ability to carry out comprehensive content-specific performance indicators. ▪ consistent performance across standards ▪ capable of abstract thought/models ▪ understands scientific variables ▪ ability to handle three distracters ▪ ninety-five percent of responses will be "4"
Proficient	The student at the Proficient level, given limited prompting, demonstrates the ability to respond accurately in performing a wide variety of content-specific performance indicators. ▪ less scattered performance across standards ▪ exhibits more abstract thinking ▪ ability to relate cause to effect ▪ recognizes there is a scientific process ▪ majority of responses are "3"+ ▪ ability to handle two or more distracters ▪ expanded exposure to science content
Nearing Proficiency	The student at the Nearing Proficiency level, given moderate prompting, demonstrates the ability to respond accurately in performing a narrow concrete set of content-specific performance indicators. ▪ ability to attend and show compliance ▪ identifies concrete concepts and objects of science ▪ performance on standards may vary ▪ greater understanding/skills related to daily living as related to science ▪ majority of responses will earn a "2"+ ▪ can handle limited distracters ▪ limited exposure to science content
Novice	The student at the Novice level, given physical assistance and/or modeling, is supported to participate in content-specific performance indicators. (none)

Appendix B—Technical Advisory Committee Members

Table B-1. 2009–10 MT CRT-Alternate: Technical Advisory Committee (TAC) Members

First Name	*Last Name*	*Position*	*Department*	*Organization*
Art	Bangert, Ph.D.	Assistant Professor	Adult and Higher Education	Montana State University
Derek	Briggs, Ph.D.	Assistant Professor	School of Education	University of Colorado
Susan	Brookhart, Ph.D.	President		Brookhart Enterprises, LLC
Ellen	Forte, Ph.D.	President		edCount, LLC
Michael	Kozlow, Ph.D.	Program Director	Assessment Program	
Scott	Marion, Ph.D.	Vice-President		Center for Assessment
Stanley	Rabinowitz, Ph.D.	Program Director	Assessment & Standards Development Services	WestEd

Appendix C—Participation Summary by Demographic Category

Table C-1. 2009–10 Montana CRT-Alternate: Summary of Participation by Demographic Category—Mathematics

Group	Number:			*Percent Tested*
	Enrolled	*Approved Exemptions*	*Tested*	
Special Education	649	8	641	100
Free/Reduced Lunch	405	7	398	100
American Indian or Alaska Native	117	6	111	100
Asian	6	0	6	100
Hispanic	20	0	20	100
Black or African American	10	0	10	100
White	522	4	518	100
Native Hawaiian or Other Pacific Island	1	0	1	100
LEP/ELL	32	3	29	100
All Students	678	11	667	100

Table C-2. 2009–10 Montana CRT-Alternate: Summary of Participation by Demographic Category—Reading

Group	Number:			*Percent Tested*
	Enrolled	*Approved Exemptions*	*Tested*	
Special Education	652	8	644	100
Free/Reduced Lunch	407	7	400	100
American Indian or Alaska Native	117	6	111	100
Asian	6	0	6	100
Hispanic	20	0	20	100
Black or African American	10	0	10	100
White	525	4	521	100
Native Hawaiian or Other Pacific Island	1	0	1	100
LEP/ELL	32	3	29	100
All Students	681	11	670	100

Table C-3. 2009–10 Montana CRT-Alternate: Summary of Participation by Demographic Category—Science

Group	Number:			*Percent Tested*
	Enrolled	*Approved Exemptions*	*Tested*	
Special Education	278	4	274	100
Free/Reduced Lunch	151	3	148	100
American Indian or Alaska Native	39	3	36	100
Asian	2	0	2	100
Hispanic	10	0	10	100
Black or African American	5	0	5	100
White	229	2	227	100
Native Hawaiian or Other Pacific Island	1	0	1	100
LEP/ELL	9	1	8	100
All Students	286	5	281	100

Appendix D—SAMPLE TASKLET

SAMPLE TASKLET

Content Standards Addressed: Standard 4: Geometry

4.1 Students will describe, model and classify two- and three-dimensional shapes.

Activity

This activity engages students in demonstrating and understanding of two- and three dimensional shapes by

- identifying two congruent shapes from a set of shapes; sorting triangles and squares into groups;
- identifying a circle among four different shapes; and
- using spatial reasoning to match shapes with congruent shapes in different orientations.

Materials Provided

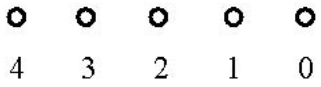
- Squares: 2 large, 1 medium, 1 small
- Triangles: 1 large, 1 medium, 1 small
- Circles: 1 large, 1 medium, 1 small
- Rectangles: 1 large, 1 medium
- Sorting Template
- Matching Template

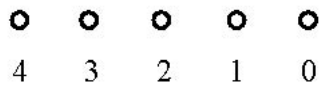
Other Materials Needed

- Materials typically used by the student for reading/writing other that what is provided in this kit
- Materials typically used by the student to communicate (e.g., communication device, objects, switches, eye gaze board, tactile symbols)
- Throughout the activity, make any material substitutions necessary to enable the student to understand test questions (e.g., objects, larger print, different pictures, materials in auditory formats).
- Materials provided may need to be further adapted for students who are hearing or visually impaired. Suggestions for adapting materials are in the CRT-Alternate Administration Manual.

Materials	Activity Steps Teacher will:	Student Work Student will:	Performance Indicators Use Scoring Guide
1. • 1 medium square • 1 medium triangle • 1 medium circle **Communication support strategies:** • Word/picture symbols for "yes" and "no" may be used to indicate readiness to move on. • Throughout the activity, make any material substitutions necessary to enable the student to understand test questions (e.g., objects, larger print, different pictures, materials in auditory formats).	1. Place all the shapes on the work space. ***"Let's start now. Here are 3 different shapes. This is a square. A square has 4 straight equal sides. This is a triangle. A triangle has 3 straight sides. This is a circle. A circle is a closed shape that is round with no straight sides. Did you see/hear about the 3 shapes I just showed you?"*** Allow the student to touch the shapes.	1. Attend to the teacher naming a square, triangle, and a circle.	1. Attend to objects or pictures of two- and three- dimensional geometric shapes and the relationships among them. o o o o o 4 3 2 1 0 Performance Indicator: 4.1.1.1 Expanded Benchmark: 4.1.1

Materials	Activity Steps Teacher will:	Student Work Student will:	Performance Indicators Use Scoring Guide
2. • 1 large square • 1 large triangle • 1 large circle • 1 large rectangle **Communication support strategies:** • Student may look at/point to task materials to express a choice. • Request may be rephrased to require a yes/no response (e.g., "Is this the circle?") • Student may tell teacher to "stop" at desired response as teacher sequentially points to each of the 4 choices.	2. Place all the shapes in random order on the work space. ***"Show me the circle."*** Scaffold: Level 3: Remove an incorrect response. Repeat task request. Level 2: Remove another incorrect response. Repeat task request. Level 1: *"This is the circle."* Assist the student as needed to identify the circle.	2. Identify a circle.	2. Identify (name) shapes as circles, squares, triangles, rectangles, and ovals. 4 3 2 1 0 Performance Indicator: 4.1.1.6 Expanded Benchmark: 4.1.1

Materials	Activity Steps Teacher will:	Student Work Student will:	Performance Indicators Use Scoring Guide
3. • Triangles: 1 large, 1 medium, 1 small • Squares: 1 large, 1 medium, 1 small • Sorting Template **Communication support strategies:** • Student may look at/point to task materials to express a choice. • Request may be rephrased to require a yes/no response (e.g., *"Is this where the square should go?"*) • Student may tell teacher to "stop" at desired location.	3. Place all the shapes in random order on the work space. ***"Here are some squares and triangles. Put all of the squares together and all of the triangles together."*** Scaffold: Level 3: Place the sorting template in front of the student. Review the picture of the square and the triangle on the template. *"Put all of the squares here and all of the triangles here."* Level 2: Place 1 square and 1 triangle on the template. *"I put 1 square and 1 triangle on the paper. Now, you finish putting the squares together and the triangles together."* Level 1: Place the rest of the triangles and the squares on the paper. *"All of the squares are here. All of the triangles are here."* Assist the student as needed to identify the group of triangles.	3. Indicate that all the triangles belong together and all the squares belong together.	3. Sort 2-dimensional physical shapes according to their shape.  4 3 2 1 0 Performance Indicator: 4.1.1.5 Expanded Benchmark: 4.1.1

Materials	Activity Steps Teacher will:	Student Work Student will:	Performance Indicators Use Scoring Guide
4. • 1 large triangle • 1 small triangle • 2 congruent large squares • 1 small square **Communication support strategies:** • Student may look at/point to task materials to express a choice. • Request may be rephrased to require a yes/no response (e.g., *"Is this shape the same size and shape as this shape?"*) • Student may tell teacher to "stop" at desired location.	4. Place all the shapes on the work space. ***"Show me the 2 shapes that are the same shape and size."*** Note: When removing shapes, only remove the triangles and small square. Scaffold: Level 3: Remove an incorrect response. Repeat task request. Level 2: Remove another incorrect response. Repeat task request. Level 1: *"These 2 shapes are the same shape and size. They both are squares."* Assist the student as needed to identify the congruent squares.	4. Identify congruent squares.	4. Recognize 2-dimensional physical shapes as being the same (congruent) or different.  Performance Indicator: 4.1.1.4 Expanded Benchmark: 4.1.1

Materials	Activity Steps Teacher will:	Student Work Student will:	Performance Indicators Use Scoring Guide
5. • 1 medium square • 1 medium triangle • 1 medium rectangle • Matching Template **Communication support strategies:** • Student may look at/point to task materials to express a choice. • Request may be rephrased to require a yes/no response (e.g., *"Does this shape match this shape?"*) • Student may tell teacher to "stop" at desired location.	5. Place the matching template and 4 shapes on the work space. ***"Match each of these shapes with its picture."*** <u>Scaffold</u>: <u>Level 3</u>: Remove incorrect responses from the template and validate the correct responses. If student did not have a correct response, place a shape with its picture. *"I matched the ____ with its picture. Now, you finish matching the shapes with their pictures."* <u>Level 2</u>: Remove incorrect responses from the template and validate the correct responses. Match 2 shapes with their pictures. *"I matched the ____ and the ____ with their pictures. Now, you finish matching the shapes with their pictures."* <u>Level 1</u>: Remove the incorrect responses. Match the remaining shapes with their pictures. "Each shape is with its picture." Assist the student as needed to match the 4 shapes to their pictures.	5. Match 4 shapes with their pictures in different orientations.	5. Match 2-dimensional physical shapes to pictures of the shapes in different orientations. 4 3 2 1 0 Performance Indicator: 4.1.1.7; 4.5.1.5 Expanded Benchmark: 4.1.1, 4.5.1 **End of Sample Tasklet**

Appendix E—Interrater Reliability Report

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Examining the Interrater Reliability of Montana's CRT-Alternate

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University of Montana-Missoula

Submitted
by
The Montana Office of Public Instruction
to
The United States Department of Education
for
Peer Review
by
Judy Snow
State Assessment Director

As an outcome of the U.S. Department of Education's review of Montana's assessment system, the state was asked to submit *evidence* of the interrater reliability of its alternate assessment, the CRT-Alt. Dr. Stanley Rabinowitz, a consultant made available to Montana's Office of Public Instruction by the U.S. Department of Education because of his role with the Assessment and Accountability Comprehensive Center, provided guidance that led to the design of a study to respond to this requirement. This design was shared with Montana's Technical Advisory Committee at its January, 2007 meeting. With their endorsement, the study was implemented during the spring, 2007 testing window. This report summarizes the results of this effort.

Design of the Study

As suggested by Dr. Rabinowitz, this study was designed to gather multiple sources of data that, collectively, would produce a "preponderance of evidence" supporting the overall integrity as well as the interrater reliability of the CRT-Alt. This broader view is based on the belief that scoring will not be meaningful if the assessment is not administered as required. This approach is responsive to the unique characteristics of Montana, and the small number of students with disabilities who take this form of the test. During the March, 2007 assessment period, a total of 698 students were tested using the CRT-Alt across grades 3, 4, 5, 6, 7, 8, and 10. The number of students tested per grade ranged from a low of 84 students in Grade 5 to a high of 133 students in Grade 6.

The study encompassed plans to gather data relative to five test characteristics. These focus areas, and the data sources used to evaluate them, are summarized in Table 1 below.

Table 1: Test Characteristics and Sources of Evidence for CRT-Alt Interrater Reliability Study

Test Characteristic	Source of Data
1. Evidence-Base for Practices used in Test Design	• Review of professional literature addressing pedagogical practices for students with severe cognitive disabilities. • Examination of reliability indices in published research using presentation and prompting methodology adopted for the CRT-Alt.
2. Accessibility of Training for Test Administrators	• Test administrator training survey. • Test administrator questions included in the Student Response Booklet.
3. Test Administrator Knowledge and Understanding of Testing Procedures	• Test administrator training survey. • Independent observer ratings of fidelity of test administration.
4. Fidelity of Test Administration	• Independent observer ratings of fidelity of test administration.
5. Level of Agreement: Item Scoring	• Comparison of scores of test administrator with those of a trained independent observer present during test administration. • Sample of Evidence Templates submitted with Student Test Booklet, reviewed and scored by independent reviewer.

In the remainder of this report, the activities that have been undertaken in each of these areas, and the results, are summarized.

Use of Evidence-Based Practices in Test Design

The CRT-Alt is a performance based assessment, measuring a student's response to a series of test items that are presented in the format of short instructional tasks. Given the heterogeneity of the students who are eligible to be assessed with this instrument in terms of their motor, sensory, language, and cognitive skills, the test builds in considerable flexibility in regard to the materials used to present test items, and the response modalities used by students to communicate and interact throughout the assessment. For example, real objects may be substituted for the pictures provided in the test materials kit to accommodate students with visual

limitations. In sharp contrast to this flexibility, all other aspects of the administration and scoring of this assessment are tightly controlled.

Administration of the CRT-Alt incorporates a response prompting methodology known as the "system of least prompts" (Wolery, Ault & Doyle, 1992). This is a well-established strategy that has been found to be effective as a teaching procedure for students with severe disabilities across a wide range of applications (Doyle, Wolery, Ault & Gast, 1988). The rationale for its use in this testing context is based on the information summarized below.

- Students with severe disabilities often demonstrate skill gains in small increments that would be lost if performance was scored with a dichotomous correct/incorrect response system. For this population of students, learning is typically measured in terms of the amount of support required to produce a correct response. When responses do not occur independently, a structured sequence of prompts allows teachers to consistently present and systematically control the amount of external support provided in a teaching situation. Student learning is measured in terms of increasing levels of independence (i.e., decreased reliance upon external prompts).

  The CRT-Alt uses a "least to most" prompt hierarchy. As described by Wolery et al. (1992), the system of least prompts consists of a hierarchy of at least three levels. The first level is the opportunity for a student to respond independently, without external prompts. If that does not occur, a planned sequence of prompts, arranged from the least intrusive to the most intrusive in terms of amount of assistance, is implemented. The final level of the prompt sequence results in an assisted, correct response. For the CRT-Alt, a four level hierarchy has been developed for each test item.

  With origins in an applied behavior analysis model of teaching that dates back to the late 1960's and 70's, the prevalence and value of this methodology for students with severe disabilities is unquestioned in the research and practice literature (e.g., Alberto & Troutman, 1995; Demchak, 1990; Falvey, 1986). While much has been learned about effective instruction for students who experience significant challenges to learning since that time, the value of systematic instructional procedures continues to be recognized. The sixth edition of one of the most popular textbooks on teaching students with severe disabilities (Snell & Janney, 2006) continues to emphasize the importance of these very procedures in working with students with severe disabilities.

- Since prompt response systems are a common teaching approach for students with severe disabilities, teachers are familiar with this methodology and use it on a regular basis. University coursework focused on the needs of students with severe disabilities emphasizes systematic instructional procedures that are grounded in the science of applied behavior analysis. A national review of preservice programs (Ryndak, Clark, Conroy & Stuart, 2001) verifies the importance of this skill set in teacher preparation programs focused on the needs of students with severe disabilities. Because this is an effective and common teaching methodology, the approach to test administration is relatively easy to understand and implement for those experienced in teaching students

with severe cognitive disabilities. Most recent data available from the Office of Public Instruction indicate that for the 2005-06 school year, 98.5% of the state's 750 special educators were reported to be Highly Qualified, suggesting their familiarity with this methodology.

- In the extensive research base about response prompting systems, acceptable levels of interrater reliability have been achieved. The use of this and other response prompting methods has been a strategy used in special education research for over thirty-five years. This body of research utilizes single subject research methods (Tawney & Gast, 1984) due to the low incidence and unique characteristics of the participants in these studies. Direct observational data are collected, requiring the use of independent observers to verify the reliability of the observational data. A standard rule of thumb in this type of research is that an average reliability index of 80% is acceptable. Results typically are reporting in the 85-95% range (e.g., Colyer & Collins, 1996; McDonnell, 1987; West & Billingsley, 2005), as the prompting procedures are clearly spelled out, easy to implement, and readily observable. This evidence provides a strong foundation for the selection of this methodology for this assessment context, especially under conditions of tight controls for the training and administration of the measure, as is the case in Montana.

The administration of the CRT-Alt is based upon systematic procedures that are time-tested and evidence-based with the population of students for whom this test is designed. In this application, *scaffolding* is the term used to describe the least to most prompting process that is consistently and predictably used in the administration of each item. Each test item is carefully scripted, eliminating the need for teachers to determine how to present a question or what should be said. The scaffolding sequence is also scripted, guiding the teacher in a step-by-step manner through the administration of each test item.

This same predictable and consistent structure is applied to the scoring of each item. The scaffolding sequence is directly aligned with the scoring rubric for each test item. Finally, there is a requirement that test administrators submit selected pieces of evidence for each student in all subject areas tested. Submission of concrete evidence of student's performance relative to a specifically designated test item provides a means of checking whether information recorded on evidence templates are consistent with item scores entered on student scoring forms.

Collectively, these design features create a standardized structure intended to provide teachers with sufficient support to implement the CRT-Alt with integrity. Other components of OPI's implementation approach, described in the next section, further support this goal.

Accessibility of Training

For the 2006-07 test administration, the OPI implemented a training plan designed to address the limitations of large group training formats, conducted over the state's compressed video system and the internet, used in previous years. There was a general consensus that this training did not reach the intended audience – the actual test administrators. To address this

concern, a training package was prepared and included in the Test Materials Kit provided to every test administrator. An Implementation Checklist (see Appendix A) was included in this Kit, indicating that reviewing the test training CD was the first thing that was to be done in preparing for test administration. System Test Coordinators were also alerted to the expectation that test administrators access these training materials prior to test administration.

In order to measure the success of this approach, two questions were included in the teacher-only section at the end of the test administration booklet. Additional questions were asked in a separate survey document distributed with the test materials, designed to gather information about the level of experience of the test administrators and the source of their training. These questions, and a summary of the responses received, are provided in Tables 2 through 4. In viewing these data, the total possible number of respondents is 632. This number represents the total number of students tested. However, some test administrators tested more than one student, meaning that they may have responded to the questions each time they administered the test.

Table 2: Test Administrator Responses to Yes/No Training Questions (N=632)

Training Question	Response (number/percent of respondents)		
	Yes	No	No Response
Have you given the CRT-Alt before this year, 2007?	317 (50%)	109 (17%)	206 (33%)
Did you view the teacher training CD provided with the test materials before administering the test?	462 (73%)		170[1] (27%)

[1]NOTE: "No" was not a response option. Respondents answered in the affirmative if they DID view the training CD, so it is not possible to distinguish between those who did not view the CD and those who skipped the question.

As seen in Table 2, at least half of the test administrators responding to this question reported having given the CRT-Alt before. Given the fact that this questions was left blank on the test booklets for one third of students, the actual percentage could very well be higher. It is reasonable to conclude that the population of CRT-Alt test administrators in 2007 was mostly experienced with this test. This provides a context in which to view the data about the number of test administrators who viewed the CD before administering the test.

Interpreting the responses given to the question "*was the training CD used?*", must be done with caution. The only choice on the scan form for respondents to fill in for this question was an affirmative option, indicating that they did view the CD. The assumption in the design of the response form was that those who did not view the CD would leave this blank. Unfortunately, the proportion of other items left blank on this survey makes it impossible to distinguish between true "no" responses and those that were simply skipped. With this caveat, affirmative responses to this question were made by test administrators for almost three-fourths of the students tested. The CD was a training format that did make the information accessible to those who needed it.

Information reported in Table 3 places the use of the training CD within the larger context of test administrator experience and other supports that might be provided on the local level. It was possible to mark more than one option for the question "*Describe the training you received to give this test.*" As seen in this table, the largest percentage of respondents reported receiving training through the use of the CD provided by OPI either in the current year (58%) or in a previous year (22%). Twenty percent of the respondents reported attending a training session, while 11% indicated watching the CD and attending training. A single respondent reported having never accessed training materials prior to test administration.

Table 3: Test Administrator Training Access (N=492)

Source of Training	Response (number/percent of respondents)[1]
Used training CD in 2007	285 (58%)
Attended a training in 2007	100 (20%)
Used CD and attended training in 2007	53 (11%)
Received training or viewed CD in previous year(s)	106 (22%)
Have never accessed training materials	1 (.002%)

[1]Respondents were instructed to check all responses that apply.

The final dimension of the training that was considered was the test administrator's perception of its value. They were asked to rate its value on a four-point rating scale, with a rating of "1" indicating that it was not very valuable, and "4" indicating that it was extremely valuable. Since this question was included in the back of the Student Response Booklet, a total of 632 responses were possible.

As seen in Table 4, forty-five percent of the respondents felt the training was "valuable" or "extremely valuable". The meaning rating among respondents was 2.68. This item was left blank in 25% of the Student Response Booklets. It is not possible to know whether these were left blank because the test administrator did not view the CD this year (see results above), had already responded to this question when completing the test booklet for another student, or simply chose not to respond to this question. Nevertheless, available data suggest that the training format was generally seen as helpful.

Table 4: Test Administrator Ratings of Training CD (N=632)

1 (not very valuable)	2	3	4 (extremely valuable)	No Response	Mean Rating
51 (08%)	133 (21%)	204 (32%)	84 (13%)	160 (25%)	2.68

Test Administrator Knowledge and Understanding of Testing Procedures

The next component of the research plan focused on the impact of the training materials on test administrator knowledge and understanding of the testing procedures. A series of questions was posted on a website, which test administrators were directed to access, after they had finished reviewing the training materials. For those teachers without ready access to the internet, a Word document was included on the training CD, enabling teachers to complete this training post-test, and submit it via e-mail or FAX. In order to encourage responses, teachers were not required to identify themselves.

A total of 35 responses were received. Of this total, 9 were received via e-mail, 1 was received via FAX, and the remaining 25 surveys were completed online. While this was a disappointing rate of response, it is not possible to pinpoint exactly what percent of respondents are represented by these data. As the testing contractor for Montana's CRT-Alt, Measured Progress adds these questions to the end of the test administration booklet for each student and subject area. As a result, there is some duplication in respondents since many teachers administer the assessment to more than one student. Information provided by Measured Progress indicates that 288 unique teachers were identified as test administrators for the March, 2007 assessment. Unfortunately, the teacher identification field was not completed in a number of surveys. Given this situation, the best approximation of the response rate is 12%.

As illustrated in Table 5, those that did respond to the survey correctly answered questions about the training content. The proportion of those responding correctly to the questions ranged from 89% to 100%. The questions asked, and results for each, are provided in Table 5.

Table 5: CRT-Alt Training Evaluation Questionnaire Summary (N=35)

Question **[correct response]**	**Number (%) Correct**	**Number (%) Incorrect**	**Number (%) Missing**
1. The CRT-Alt should be administered by a certified teacher who is familiar with the student being tested. [TRUE]	**32 (91%)**	**2 (6%)**	**1 (3%)**
2. It is not permissible for another person to assist in the administration of the test. [FALSE]	**33 (94%)**	**2 (6%)**	**0 (0%)**

Question [correct response]	Number (%) Correct	Number (%) Incorrect	Number (%) Missing
3. The skills assessed in the CRT-Alt are aligned with Montana's Curriculum Standards, with benchmarks that have been expanded to measure skills that lead to the acquisition of grade level skills. [TRUE]	**35 (100%)**	**0 (0%)**	**0 (0%)**
4. All materials required to administer the CRT-Alt are provided in the Test Materials Kit. [FALSE]	**34 (97%)**	**1 (3%)**	**0 (0%)**
5. Test administrators can modify the script provided for the test questions, using language that the student will understand, if the intent of the statement remains the same. [TRUE]	**32 (91%)**	**3 (9%)**	**0 (0%)**
6. Scaffolding refers to the careful placement of test materials on the work space. [FALSE]	**32 (91%)**	**3 (9%)**	**0 (0%)**
7. The score a student receives for each test item is unrelated to the amount of assistance required for the student to produce a correct response. [FALSE]	**33 (94%)**	**2 (6%)**	**0 (0%)**
8. The Halting Rule describes when it is permissible to discontinue the test due to student resistance. [TRUE]	**32 (91%)**	**3 (9%)**	**0 (0%)**
9. Introductory items in each task/tasklet are scored on a simplified rubric of 4 and 0. [TRUE]	**33 (94%)**	**2 (6%)**	**0 (0%)**
10. A magnifying glass indicates that evidence must be collected to document the response made by the student. [TRUE]	**34 (97%)**	**1 (3%)**	**0 (0%)**
11. Scores from the student Test Booklet must be transferred to a scanning form that is part of the Student Kit. [TRUE]	**31 (89%)**	**3 (9%)**	**1 (3%)**

Question [correct response]	Number (%) Correct	Number (%) Incorrect	Number (%) Missing
12. A score of "4" indicates that the test administrator provided complete assistance to the student to make the response. [FALSE]	**34 (97%)**	**1 (3%)**	**0 (0%)**
13. Students are not allowed to use specialized communication devices during testing. [FALSE]	**34 (97%)**	**1 (3%)**	**0 (0%)**

Fidelity of Implementation

While the initial areas of investigation focused on the training and preparation of test administrators, the remainder of the study examined implementation and scoring practices. An Implementation Checklist (see Appendix A) was developed to serve as a self-check for test administrators to ensure that they performed all test administration steps accurately and completely. A question was included in the test administrator survey to determine the extent to which this tool was actually used. As shown in Table 6, test administrators responsible for implementing the assessment for 56% of the students tested reported that they did use the Checklist. While only 11% said they did not, this question was left blank in the test booklets of 33% of the students.

Table 6: Test Administrator Responses to Implementation Checklist Question (N=632)

Training Question	Response (number/percent of respondents)		
	Yes	No	No Response
Did you check your test administration procedures against the Implementation Checklist that was provided with the 2007 training CD sent with the materials kit/ replacement materials?	357 (56%)	69 (11%)	206 (33%)

The second method of assessing fidelity of test implementation was through the direct observation of test administrators. During a December, 2006 phone consultation with Dr. Stanley Rabinowitz, the issue of sampling size and composition for an interrater reliability study was discussed. Given the few number of students in the testing pool, the size of the state, and the limited resources available to train and deploy qualified observers, his recommendation was that we begin with a sample of no less than 5 students per grade, with observations focused on both math and reading. If initial findings with this limited sample size showed mixed results in terms of scoring reliability and implementation fidelity, he indicated that additional observations would be required until more definitive findings were obtained. Further, the study should be repeated over multiple years to provide more cumulative evidence supporting the technical adequacy of the assessment.

When statewide information was available to indicate where students registered for the CRT-Alt were located, a sampling plan was developed that balanced statewide distribution with the practical reality of where students registered to take the CRT-Alt were clustered. The final plan, contained in Appendix B, included observation of 5 students each in Grades 3, 4, 5, 6, 7, 8 and 10. Half of the students were observed being tested in Reading, while the other half were observed during the Math Assessment. Students in the sample attended schools in the Bozeman, Helena, Billings, Great Falls, and Missoula and the small towns in the surrounding areas. Beyond the steps taken to stratify the sample to get equal representation of students at each grade level, across subject areas, and within each region of the state, the other steps taken to finalize student selection were driven by logistics. A list was compiled to indicate the location of students within each grade level Final student selection was driven by matching test administration scheduling with the availability of independent observers to travel to a school at these scheduled times.

During January and February of 2007, independent observers were recruited and trained to implement the CRT-Alt. They were also introduced to the specific observation procedures that had been developed for this study. Four experienced educators were found to observe in the Helena, Bozeman, Great Falls and Billings area school districts. In the region around Missoula, five graduate students in school psychology were recruited to serve as observers, receiving the same training as the other observers. All observers conducted a "test run" to ensure the procedures were understood before moving into the actual observations for the purposes of this

study.

During each school visitation, observation focused the fidelity issues listed below. The forms used to structure and these observations are contained in Appendix C.

- Teacher interview – teacher report of test preparation activities
- Observation of test implementation practices – occurred for an entire tasklet (Grades 3, 5, 6, 7) or 5 consecutive items in a Task (Grades 4, 8, 10)

Results of the test fidelity observations are summarized in Table 7. Information in this table is based upon observation protocols coded for 40 student/teacher pairs, a slightly larger sample than the lower limit recommended by Dr. Rabinowitz. Results indicated a consistently high level of fidelity in each key procedure that is part of the testing procedures. Test administrators observed presented the materials as described in the test booklet, and accurately followed by scripted scaffolding procedures. Introductory items, implemented in a slightly different way than other test items, were implemented correctly 95% of the time. Similarly, as described in the test booklet, students were given an opportunity to respond independently before the test administrator moved on to the use of the sequential scaffolding procedures. When these were required, they were used with fidelity 97% of the time. The only implementation practice falling below the 95% fidelity level involved the documentation of evidence. Most observers wrote explanatory notes that when these items came up, the teacher often elected to actually fill out the evidence recording form after the test administration was halted in order to maintain attention to the student and maintain the pace of the assessment.

Table 7: Fidelity of Implementation Results

Test Administration Practice	% of Observations Practice Observed
Test Preparation	
Teacher reported that they had participated in training about test administration	95%
All materials for test administration not included in test kit have been located	95%
Test materials are organized and easily accessible for test administration	95%
Test is administered in a location in which student can work without interruption	90%
Implementation Practices	
Introductory items were implemented without scaffolding, scored as either a “4" or “0"	95%
Teacher presented the materials as described in the Test Booklet.	95%
Student was given an opportunity to respond independently before any scaffolding was provided	95%
Teacher implemented the scaffolding as described in the Test Booklet.	97%

Teacher scored student response based on the level of scaffolding necessary	97%
Teacher documented evidence for those items that required it.	85%

Level of Agreement

Direct observation of test administration was conducted to gather data to assess the level of agreement between the test administrator and an independent observer. This involved the independent scoring of a minimum of 5 consecutive test items (Grades 4, 8, 10) or an entire tasklet for students assessed in grades 3, 5, 6 and 7. No interaction occurred between observer and test administrator relative to the scoring of these items. The test administrator submitted the student scores to Measured Progress, following established procedures for returning materials. The independent observers submitted their observation materials to OPI. These materials were sent to Measured Progress for analysis.

Results of the comparison in scoring between test administrators and independent observers are summarized in Table 7. An overall agreement index of 88% is based on data gathered in nineteen observations of students taking the Reading assessment, and twenty-one observations of students taking the Math assessment. The agreement level for Reading assessment items was 83%, while the level of agreement for math tasks was 91%. A breakdown of this information by grade and subject is provided in Table 8.

Table 8. Interrater Reliability Indices By Subject and Grade

Grade	Reading Results		Math Results		Combined Results	
	# of Items	% Agreement	# of Items	% Agreement	# of Items	% Agreement
3	29	69%	10	100%	39	77%
4	21	100%	38	90%	59	93%
5	16	69%	35	97%	51	88%
6	24	92%	20	100%	44	95%
7	4	100%	40	88%	44	89%
8	20	100%	20	90%	40	95%
10	27	70%	28	82%	55	76%
Total	141	83%	191	91%	332	88%

Analysis of Evidence Templates

In one or more tasklets at each grade level, there is a test item that is flagged as requiring further documentation of the student response in the form of an evidence template and Evidence Template Recording Sheet. A sample of these documents is provided in Appendix D. The Evidence Template Recording Form requires the test administrator to document the student's response to each attempt to elicit a correct response to an item, following the prescribed scaffolding process. If test administration procedures are followed correctly, there should be a

direct correspondence between the information recorded on the Evidence Template Recording Form and the score given to the student on the item.

Evidence Templates from the sample of students who were independently observed for the fidelity and level of agreement analysis were used as another source of data about the accuracy of scoring by test administrators. Templates for test items that were implemented when independent observers were present were identified by Measured Progress, duplicated, and provided to an independent person to score. The reviewer had access only to the Templates, and was asked to provide, for each, the score that the template data indicate should have been given to the student for that item. These data were sent to Measured Progress where they were compared with the score given to this item by the test administrator.

Data for this analysis encompasses an examination of 64 items in Reading and 55 items in Math, for a total of 119 items. There is variability in the number of items reviewed per grade, since they are embedded at different points in the testing process and observations captured varying numbers of these "evidence" items. Results of this analysis are provided in Table 9. As seen in this table, the level of agreement based on an aggregation of all responses across content areas is 92%, indicating a consistent correspondence between the documented sequence of response and the final score given to a student for an individual item.

Table 9. Analysis of Evidence Templates

Grade Level	Reading		Math		Combined Subjects	
	# Items	% Exact Agreement	# Items	% Exact Agreement	# Items	% Exact Agreement
3	14	100	4	75	18	94.44
4	15	100	20	90	35	94.29
5	7	71.43	2	100	9	77.78
6	5	100	3	100	8	100
7	9	100	4	75	13	92.31
8	7	85.71	9	100	16	93.75
10	7	71.43	13	92.31	20	95
Total/ Mean	64	92.19%	55	90.91%	119	91.60%

Feedback from Technical Advisory Committee

Feedback about this study was solicited from Montana's Technical Advisory Committee (TAC) at two points in time. In January of 2007, the plan was presented to the TAC for their suggestions and input. They concurred that the approach of gathering as much information as

possible across the different steps of the test training and implementation process was appropriate given the limitations of the size of the student population and available resources. This approach created the opportunity to evaluate multiple sources of evidence collected at these various steps in the process.

The initial results of the study were shared with the TAC in July, 2007. The feedback received at that time was that the process implemented was sound, representing more than a study of the CRT-Alt's inter-rater reliability. The picture that emerges from putting together all of the information gathered during this study is that the process and procedures used for Montana's CRT-Alt appear sound. Comments suggested that the level of scripting provided for the item implementation and scaffolding was very good, likely contributing to the positive results in relation to both implementation fidelity and scoring reliability of the CRT-Alt.

Summary and Conclusions

This study examined the entire process involved in the implementation of the CRT-Alt by test administrators in Montana. From the point at which materials are received and reviewed by the test administrators through the actual implementation and scoring of the test, data were gathered to evaluate current procedures and associated outcomes. Concluding remarks, including recommendations for future evaluation, are provided relative to each area examined in this study.

- The test design incorporates evidence-based implementation approaches that are appropriate for the group of students who are eligible for an alternate assessment under NCLB guidelines. The format achieves a good and necessary balance between the flexibility needed to address the individual needs of students and the structured, scripted method used to guide the test administrator through the item presentation, scaffolding, and scoring processes.

- The current format of the training, available on a CD that can used by a test administrator at his/her convenience, appears to be a viable method of getting the basic information about test administration out to the people who need it. While the static nature of this form of training is not ideal, test administrator ratings indicate that it is seen an efficient way of imparting necessary information. Since the data indicate that only a small proportion of test administrators receive training in any other form, additional opportunities for training that is more interactive merits consideration as a supplement to the Training CD approach, demonstrated to be effective in reaching test administrators.

- There are some mechanical issues about the way in which the training and teacher survey data are collected that need to be examined for future administrations. Given the number of test administrators that give the test to multiple students, it would be beneficial to identify a way to collect survey data so that these test administrators see and/or respond to the questions only once. This would help to reduce the loss of information when a sizeable proportion of questions are left blank.

- Self-check tools such as the Implementation Checklist appear to be beneficial. They do not have much of an associated "cost" in terms of time or materials, and provide a comprehensive list of the entire process in a single place. Continuation of this practice is recommended.

- The results of the direct observation of a sample of test administrators were very positive. They suggest that the supports built into the current test administration protocols are sufficient to yield consistent implementation practices and scoring. As resources are available, repeating this approach in other parts of the state or with larger samples may be warranted. The next issue to consider is the generalization and maintenance of this level of fidelity across time, as Science assessments are introduced in the next testing cycle. Given the utility of the observation methodology used this year, it is worth considering the use of this methodology to conduct "spot checks" to evaluate maintenance of implementation fidelity and scoring reliability in future years.

- The evaluation of Evidence Templates provides another opportunity for period "spot checks" in a manner that is not too costly in terms of additional time and resources. Conducting this type of analysis on a random sample of students across time is suggested, given the fact that the data are readily available.

In conclusion, the preponderance of evidence gathered in this study confirms the integrity of the CRT-Alt procedures currently in use in Montana. An appropriate "next step" is to determine how to fine tune the collection of the range of data considered in this study to address the identified data collection limitations, and to develop an implementation plan that allows for periodic maintenance probes to verify that these results continue over time.

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Appendix F—Released Performance Level Indicators

Reading - Grade 3		
Item	**Performance Indicator**	**Standard**
1	Attend to a person demonstrating with concrete materials.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
2	Demonstrate an understanding that numbers, as opposed to letters, are used to express quantity, order, or size/amount.	Standard 2: Students apply a range of skills and strategies to read.
3	Count with another person.	Standard 2: Students apply a range of skills and strategies to read.
4	Show a quantity.	Standard 2: Students apply a range of skills and strategies to read.
5	Enter numbers correctly on a calculator/ write numbers correctly.	Standard 2: Students apply a range of skills and strategies to read.
6	Attend to another person combining and subdividing shapes.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
7	Touch and move shapes toward creating new shapes.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
8	Recognize properties of 2-dimensional shapes.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
9	Find various shapes in the environment.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
10	Produce 2-dimensional shapes. Carry out a strategy to solve a geometric problem.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
11	Attend to objects or pictures of two- and three-dimensional geometric shapes and the relationships among them.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
12	Identify (name) shapes as circles, squares, triangles, rectangles, and ovals.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
13	Sort 2-dimensional physical shapes according to their shape.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
14	Recognize 2-dimensional physical shapes as being the same (congruent) or different.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.

Reading - Grade 3		
Item	**Performance Indicator**	**Standard**
15	Match 2-dimensional physical shapes to pictures of the shapes in different orientations. Explain/show spatial reasoning.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
16	Attend to another person estimating an amount in a given set.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
17	Use a quantitative label when making a guess.	Standard 4: Students select, read, and respond to print and nonprint materials for a variety of purposes.
18	Identify a reasonable quantity when guessing the amount in a given set.	Standard 4: Students select, read, and respond to print and nonprint materials for a variety of purposes.
19	Use methods and tools to solve a problem, including drawing pictures, modeling with objects, estimating, using paper and pencil, and using a calculator.	Standard 4: Students select, read, and respond to print and nonprint materials for a variety of purposes.
20	Determine which of two numbers is closer to the quantity in a given set.	Standard 4: Students select, read, and respond to print and nonprint materials for a variety of purposes.
21	Attend to another person making patterns and to a person describing patterns.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
22	Extend or supply a missing element in a repeating pattern by attribute or number.	Standard 2: Students apply a range of skills and strategies to read.
23	Extend and explain an alternating pattern of two or more objects, shapes, designs, or numbers.	Standard 2: Students apply a range of skills and strategies to read.
24	Reproduce an alternating pattern of two or more objects, shapes, designs, or numbers.	Standard 2: Students apply a range of skills and strategies to read.
25	Create a repeating pattern using objects, shapes, designs, or numbers. Carry out a strategy to solve problems involving patterns, relations, or functions.	Standard 2: Students apply a range of skills and strategies to read.

Mathematics Grade 3		
Item	**Performance Indicator**	**Standard**
1	Attend to a person demonstrating with concrete materials.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
2	Demonstrate an understanding that numbers, as opposed to letters, are used to express quantity, order, or size/amount.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
3	Count with another person.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
4	Show a quantity.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
5	Enter numbers correctly on a calculator/ write numbers correctly.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
6	Attend to another person combining and subdividing shapes.	Standard 4: Students demonstrate understanding of shape and ability to use geometry.
7	Touch and move shapes toward creating new shapes.	Standard 4: Students demonstrate understanding of shape and ability to use geometry.
8	Recognize properties of 2-dimensional shapes.	Standard 4: Students demonstrate understanding of shape and ability to use geometry.
9	Find various shapes in the environment.	Standard 4: Students demonstrate understanding of shape and ability to use geometry.
10	Produce 2-dimensional shapes. Carry out a strategy to solve a geometric problem.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 4: Students demonstrate understanding of shape and ability to use geometry.
11	Attend to objects/pictures of two- and three-dimensional geometric shapes and their relationships;	Standard 4: Students demonstrate understanding of shape and ability to use geometry.

Mathematics Grade 3		
Item	**Performance Indicator**	**Standard**
12	Identify (name) shapes as circles, squares, triangles, rectangles, and ovals.	Standard 4: Students demonstrate understanding of shape and ability to use geometry.
13	Sort 2-dimensional physical shapes according to their shape.	Standard 4: Students demonstrate understanding of shape and ability to use geometry.
14	Recognize 2--dimensional physical shapes as being the same (congruent) or different.	Standard 4: Students demonstrate understanding of shape and ability to use geometry.
15	Match 2-dimensional physical shapes to pictures of the shapes in different orientations. Explain/show spatial reasoning.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 4: Students demonstrate understanding of shape and ability to use geometry.
16	Attend to another person estimating an amount in a given set.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
17	Use a quantitative label when making a guess.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
18	Identify a reasonable quantity when guessing the amount in a given set.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.

Mathematics Grade 3		
Item	**Performance Indicator**	**Standard**
19	Use methods and tools to solve a problem, including drawing pictures, modeling with objects, estimating, using paper and pencil, and using a calculator.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
20	Determine which of two numbers is closer to the quantity in a given set.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
21	Attend to another person making patterns and to a person describing patterns.	Standard 7: Students demonstrate understanding of and an ability to use patterns, relations and functions.
22	Extend or supply a missing element in a repeating pattern by attribute or number.	Standard 7: Students demonstrate understanding of and an ability to use patterns, relations and functions.
23	Extend and explain an alternating pattern of two or more objects, shapes, designs, or numbers.	Standard 7: Students demonstrate understanding of and an ability to use patterns, relations and functions.
24	Reproduce an alternating pattern of two or more objects, shapes, designs, or numbers.	Standard 7: Students demonstrate understanding of and an ability to use patterns, relations and functions.
25	Create a repeating pattern using objects, shapes, designs, or numbers. Carry out a strategy to solve problems involving patterns, relations, or functions.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 7: Students demonstrate understanding of and an ability to use patterns, relations and functions.

Reading - Grade 4		
Item	**Performance Indicator**	**Standard**
1	Attends to people and objects in the environment.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
2	Locates a picture/symbol/object when named or signed.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
3	Selects literacy materials/books by character or topic.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
4	Uses word recognition skills and context clues to comprehend text.	Standard 2: Students apply a range of skills and strategies to read.
5	Identifies words/pictures/symbols/objects that are new and unfamiliar.	Standard 2: Students apply a range of skills and strategies to read.
6	Anticipates the beginning of literacy activity (looks toward reader, tolerates headphones, locates literacy materials).	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
7	Located a picture/symbol/object when named or signed.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
8	Provides details about perspective.	Standard 4: Student select, read, and respond to print and nonprint material for a variety of purposes.
9	Identifies events or steps from a functional text.	Standard 4: Student select, read, and respond to print and nonprint material for a variety of purposes.
10	Uses a timeline to provide information about an event.	Standard 4: Student select, read, and respond to print and nonprint material for a variety of purposes.
11	Attends to literacy materials.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
12	Identifies components related to the beginning of a reading selection.	Standard 2: Students apply a range of skills and strategies to read.
13	Analyzes supporting details in order to draw conclusions from a reading selection.	Standard 2: Students apply a range of skills and strategies to read.
14	Identifies the main character in a story.	Standard 2: Students apply a range of skills and strategies to read.
15	Answers "what" questions about objects in story.	Standard 2: Students apply a range of skills and strategies to read.

Reading - Grade 4		
Item	**Performance Indicator**	**Standard**
16	Attends to literacy materials from beginning to end.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
17	Identifies a preferred resource to gain information.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
18	Identifies supporting details from a reading selection.	Standard 2: Students apply a range of skills and strategies to read.
19	Identifies words/pictures/symbols/objects that are new and unfamiliar.	Standard 2: Students apply a range of skills and strategies to read.
20	Demonstrates understanding of a new word based on context of a reading selection.	Standard 2: Students apply a range of skills and strategies to read.
21	Attends to literacy materials from beginning to end.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
22	Answers “who” questions about characters in stories.	Standard 2: Students apply a range of skills and strategies to read.
23	Responds to yes/no questions about information in print and nonprint materials.	Standard 5: Students gather, analyze, synthesize, and evaluate information from a variety of sources, and communicate their findings in ways appropriate for their purposes and audiences.
24	Identifies supporting details from a reading selection.	Standard 2: Students apply a range of skills and strategies to read.
25	Identifies components related to the end of a story.	Standard 2: Students apply a range of skills and strategies to read.

Mathematics - Grade 4		
Item	**Performance Indicator**	**Standard**
1	Attends to another person reviewing counters; anticipates the beginning f the math activity; and attends to materials being displayed.	Standard 1: Students engage in the mathematical processes of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology.
2	Demonstrates the concept of one.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
3	Applies a number (word) to a quantity of objects in a collection.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
4	Determines which of two numbers is closer to the quantity in a given set.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
5	Computes addition and subtraction problems with single digits.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
6	Attends to another person counting; anticipated the beginning of the math activity; and attends to materials being displayed.	Standard 1: Students engage in the mathematical processes of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology.
7	Counts using a sequential order of numbers (e.g., 1, 2, 3, 4; rote counting).	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
8	Demonstrates one-to-one correspondence among up to 12 objects and counting numbers with no recounting (rational counting).	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
9	Demonstrates an understanding that the final number said when counting objects is the quantity of the set.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
10	Computes addition and subtraction problems with single digits.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.

Mathematics - Grade 4		
Item	**Performance Indicator**	**Standard**
11	Attends to another person reviewing table; anticipates the beginning of the math activity; and attends to materials being displayed.	Standard 1: Students engage in the mathematical processes of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology.
12	Given a class of objects, sorts into categories and subcategories.	Standard 6: The students demonstrate understanding of an ability to use data analysis, probability, and statistics.
13	Sets up graph (table), (i.e., labels axes); provides title.	Standard 6: The students demonstrate understanding of an ability to use data analysis, probability, and statistics.
14	Uses symbols to represent data; creates a simple graph, frequency plat, or frequency table using real objects and/or symbols.	Standard 6: The students demonstrate understanding of an ability to use data analysis, probability, and statistics.
15	Explains/shows how decisions were made, using a table or graph.	Standard 6: The students demonstrate understanding of an ability to use data analysis, probability, and statistics.
16	Attends to another person reviewing a graph; anticipates the beginning of the match activity; and attends to materials being displayed.	Standard 1: Students engage in the mathematical processes of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology.
17	Determines which category has the most/least.	Standard 6: The students demonstrate understanding of an ability to use data analysis, probability, and statistics.
18	Compares categories of data using comparison words.	Standard 6: The students demonstrate understanding of an ability to use data analysis, probability, and statistics.
19	Communicates the relationships between categories of collected data.	Standard 6: The students demonstrate understanding of an ability to use data analysis, probability, and statistics.
20	Predicts the outcome of a chance event using a chance device.	Standard 6: The students demonstrate understanding of an ability to use data analysis, probability, and statistics.
21	Attends to another person reviewing two difference sets of counters; anticipates the beginning of the math activity; and attends to materials being displayed.	Standard 1: Students engage in the mathematical processes of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology.

Mathematics - Grade 4		
Item	**Performance Indicator**	**Standard**
22	Groups/sorts objects into two sets.	Standard 7: Students demonstrate understanding of and an ability to use patterns, relations and functions.
23	Reproduces (matches) a repeated event.	Standard 7: Students demonstrate understanding of and an ability to use patterns, relations and functions.
24	Creates a growing pattern or attribute or number.	Standard 7: Students demonstrate understanding of and an ability to use patterns, relations and functions.

Science - Grade 4		
Item	**Performance Indicator**	**Standard**
1	Attend to common substances or objects.	Standard 2: Students demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems, and demonstrate the thinking skills associated with this knowledge.
2	Recognize a mixture.	Standard 2: Students demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems, and demonstrate the thinking skills associated with this knowledge.
3	Recognize a mixture.	Standard 2: Students demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems, and demonstrate the thinking skills associated with this knowledge.
4	Identify the different components of a mixture.	Standard 2: Students demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems, and demonstrate the thinking skills associated with this knowledge.
5	Identify how a given mixture can be separated.	Standard 2: Students demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems, and demonstrate the thinking skills associated with this knowledge.
6	Attends to pictures being shown.	Standard 2: Students demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems, and demonstrate the thinking skills associated with this knowledge.
7	Recognize animals.	Standard 3: Students demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment, and demonstrate thinking skills associated with this knowledge.

Science - Grade 4		
Item	**Performance Indicator**	**Standard**
8	Recognize plants.	Standard 3: Students demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment, and demonstrate the thinking skills associated with this knowledge.
9	Recognize arms, legs, heads, bodies, antennae, eyes, nose, mouths and tails of animals.	Standard 3: Students demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment, and demonstrate the thinking skills associated with this knowledge.
10	Recognize which is living when given a choice between something that is living and something that is nonliving. Identify which components in a group are living and which are nonliving.	Standard 3: Students demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment, and demonstrate the thinking skills associated with this knowledge.
11	Sort plants and animals according to their similarities and differences.	Standard 3: Students demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment, and demonstrate the thinking skills associated with this knowledge.
12	Attend to the weather.	Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.
13	Recognize that rain is liquid water.	Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.

Science - Grade 4		
Item	**Performance Indicator**	**Standard**
14	Recognize that rain is liquid water.	Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.
15	Identify parts of the water cycle. Recognize that lakes and rivers have water in them.	Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.
16	Recognize that winter is usually the colder time of year.	Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.
17	Attend to the seasons.	Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.
18	Recognize that fall is the time that the weather begins to become colder.	Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.
19	Recognize that summer is usually the hottest time of the year.	Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.
20	Recognize that winter is usually the colder time of year.	Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.

Science - Grade 4		
Item	**Performance Indicator**	**Standard**
21	Identify a question that would increase knowledge about the world.	Standard 6: Students understand historical developments in science and technology.
22	Attend to tools being shown.	Standard 2: Students demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems, and demonstrate the thinking skills associated with this knowledge.
23	Compare the common physical properties.	Standard 2: Students demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems, and demonstrate the thinking skills associated with this knowledge.
24	Identify tools needed to solve a problem.	Standard 5: Students understand how scientific knowledge and technological developments impact today's societies and cultures.
25	Attend to common tools to measure length.	Standard 1: Students design, conduct, evaluate, and communicate processes and results of scientific investigations, and demonstrate the thinking skills associated with this procedural knowledge.
26	Recognize technology as tools and techniques to solve problems.	Standard 5: Students understand how scientific knowledge and technological developments impact today's societies and cultures.

Reading - Grade 5		
Item	**Performance Indicator**	**Standard**
1	Attend to literacy materials from beginning to end.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
2	Use a resource to solve a problem or gain needed information.	Standard 4: Students select, read, and respond to print and nonprint materials for a variety of purposes.
3	Use a resource to solve a problem or gain needed information.	Standard 4: Students select, read, and respond to print and nonprint materials for a variety of purposes.
4	Accurately order steps from a functional text.	Standard 4: Students select, read, and respond to print and nonprint materials for a variety of purposes.
5	Demonstrate understanding of the difference between an information resource and literature.	Standard 4: Students select, read, and respond to print and nonprint materials for a variety of purposes.
6	Attend to person and literacy materials in a purposeful manner.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
7	Make an appropriate prediction.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
8	Compare and contrast the impact of setting.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
9	Identify environmental print in context.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
10	Follow directions that contain a preposition.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
11	Attend to person and literacy materials in a purposeful manner.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
12	Recall the name of a common object when given the function of the object.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
13	Select important details from reading materials.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
14	Identify a resource to gain information.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
15	Identify the main message of an expository reading selection.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.

Reading - Grade 5		
Item	**Performance Indicator**	**Standard**
16	Attend to a literacy activity in a purposeful manner.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
17	Identify components related to the beginning of a reading selection.	Standard 2: Students apply a range of skills and strategies to read.
18	Answer “where” questions about the story.	Standard 2: Students apply a range of skills and strategies to read.
19	Sequence events in simple stories.	Standard 2: Students apply a range of skills and strategies to read.
20	Draw conclusions based on facts in the story.	Standard 2: Students apply a range of skills and strategies to read.
21	Attend to person and literacy materials in a purposeful manner.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
22	Match pictures to printed words.	Standard 2: Students apply a range of skills and strategies to read.
23	Recognize consonant sounds.	Standard 2: Students apply a range of skills and strategies to read.
24	Use simple letter-sound association to decode unfamiliar words.	Standard 2: Students apply a range of skills and strategies to read.
25	Identify syllables.	Standard 2: Students apply a range of skills and strategies to read.

Mathematics - Grade 5		
Item	**Performance Indicator**	**Standard**
1	Attend to teacher placing numbers in order from least/smallest to greatest/largest.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
2	Position numbers on a number line.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
3	Identify first and last.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
4	Indicate ordinal position.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
5	Arrange a set of objects, up to ten, from least to most. Carry out a strategy to solve a number problem.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
6	Attend to another person combining objects to add.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
7	Demonstrate an understanding of the concepts of some/more/ less/take away/all gone/ no more.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
8	Connect plus and minus symbols to operations.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
9	Demonstrate an understanding that adding 0 to any number equals the same number. Carry out a strategy to solve a number problem.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
10	Model a written addition problem using sets of objects, combining the sets, and counting the objects, either counting all or counting on.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
11	Attend to another person showing the relationship between two variables using objects, pictures, symbols, or numbers.	Standard 3: Students use algebraic concepts, process, and language to model and solve a variety of real-world and mathematical problems.

Mathematics - Grade 5		
Item	**Performance Indicator**	**Standard**
12	Recognize a cause-effect relationship between two elements.	Standard 3: Students use algebraic concepts, process, and language to model and solve a variety of real-world and mathematical problems.
13	Choose correct strategies or procedures to solve an algebraic problem in algebra.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 3: Students use algebraic concepts, process, and language to model and solve a variety of real-world and mathematical problems.
14	Demonstrate/ communicate what the relationship is between two elements.	Standard 3: Students use algebraic concepts, process, and language to model and solve a variety of real-world and mathematical problems.
15	Use methods and tools to solve a measurement problem, including drawing pictures, modeling with objects, estimating, using paper and pencil, and using a calculator.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 3: Students use algebraic concepts, process, and language to model and solve a variety of real-world and mathematical problems.
16	Attend to another person reading temperature.	Standard 5: Students demonstrate understanding of measurable attributes and an ability to use measurement processes.
17	Select the appropriate tool to be used in making a measure.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 5: Students demonstrate understanding of measurable attributes and an ability to use measurement processes.
18	Read temperatures from a thermometer to the accuracy of the labeled numbers.	Standard 5: Students demonstrate understanding of measurable attributes and an ability to use measurement processes.

Mathematics - Grade 5		
Item	**Performance Indicator**	**Standard**
19	Carry out a strategy to solve a measurement problem.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 5: Students demonstrate understanding of measurable attributes and an ability to use measurement processes.
20	Attend to real world problems that require measurement.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 5: Students demonstrate understanding of measurable attributes and an ability to use measurement processes.
21	Attend to another person measuring capacity.	Standard 5: Students demonstrate understanding of measurable attributes and an ability to use measurement processes.
22	Select the appropriate tool to be used in making a measure.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 5: Students demonstrate understanding of measurable attributes and an ability to use measurement processes.
23	Use methods and tools to solve a measurement problem, including drawing pictures, modeling with objects, estimating, using paper and pencil, and using a calculator.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 5: Students demonstrate understanding of measurable attributes and an ability to use measurement processes.
24	Use nonstandard tools and units to determine the capacity of a container.	Standard 5: Students demonstrate understanding of measurable attributes and an ability to use measurement processes.
25	Use standard tools and standard units of capacity to measure the capacity of a container.	Standard 5: Students demonstrate understanding of measurable attributes and an ability to use measurement processes.

Reading - Grade 6		
Item	**Performance Indicator**	**Standard**
1	Attend to people and literacy materials in a purposeful manner.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
2	Display knowledge of front and back, right-side up, page turning, and scanning when exploring literacy materials.	Standard 2: Students apply a range of skills and strategies to read.
3	Use listening/observing strategies to comprehend a reading selection.	Standard 2: Students apply a range of skills and strategies to read.
4	Based on the context of a reading selection, identify appropriate definition of multiple-meaning words.	Standard 2: Students apply a range of skills and strategies to read.
5	Use word recognition skills and context clues to comprehend text.	Standard 2: Students apply a range of skills and strategies to read.
6	Attend to person and literacy materials in a purposeful manner.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
7	Identify the main idea in a selection.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
8	Identify details related to the main idea.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
9	Select important details/facts from reading materials.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
10	Creates an illustration/photo essay/ object box/ specific to the text.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
11	Attend to person and literacy materials in a purposeful manner.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
12	Identify the main message of an expository reading selection.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
13	Retell key events in sequence.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
14	Identify common object/symbol when given the function of the object or symbol.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.

Reading - Grade 6		
Item	**Performance Indicator**	**Standard**
15	Select important details/facts from reading materials.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
16	Attend to person and literacy materials in a purposeful manner.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
17	Answer “who” questions about characters in stories.	Standard 2: Students apply a range of skills and strategies to read.
18	Answer “what” questions about objects in stories.	Standard 2: Students apply a range of skills and strategies to read.
19	Answer “why” questions about issues in a reading selection.	Standard 2: Students apply a range of skills and strategies to read.
20	Identify cultural elements in a reading selection.	Standard 4: Students select, read, and respond to print and nonprint materials for a variety of purposes.
21	Attends to literacy materials from beginning to end.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
22	Identify details of characters that are the same.	Standard 5:Students gather, analyze, synthesize, and evaluate information from a variety of sources, and communicate their findings in ways appropriate for their purposes and audiences.
23	Compare/contrast information in reading materials.	Standard 5:Students gather, analyze, synthesize, and evaluate information from a variety of sources, and communicate their findings in ways appropriate for their purposes and audiences.
24	On an organizer, make a graphic representation of similarities and differences from a topic in the text.	Standard 5:Students gather, analyze, synthesize, and evaluate information from a variety of sources, and communicate their findings in ways appropriate for their purposes and audiences.
25	Make connections between reading materials and personal experiences.	Standard 5:Students gather, analyze, synthesize, and evaluate information from a variety of sources, and communicate their findings in ways appropriate for their purposes and audiences.

Mathematics Grade 6		
Item	**Performance Indicator**	**Standard**
1	Attend as another person demonstrates an understanding that written numerals represent number (quantities).	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
2	Match a numeral to a quantity of a set of objects.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
3	Produce a numeral to 10.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
4	Use methods and tools to solve a number problem, including modeling with objects.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
5	Carry out a strategy to solve a number problem.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
6	Attend to another person removing objects or comparing sets to subtract.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
7	Employ strategies to recall simple subtraction facts for single-digit differences from 10 (e.g., counting back; comparison/addition— add to the smaller number to get the larger one).	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
8	Demonstrate understanding that subtracting 0 from any number equals the number.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
9	Use a calculator for whole-number computation.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
10	Use methods and tools to solve a number problem, including drawing pictures, modeling with objects, estimating, using paper and pencil, and using a calculator.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.

Mathematics Grade 6		
Item	**Performance Indicator**	**Standard**
11	Attend to another person demonstrating congruence.	Standard 4: Students demonstrate understanding of shape and ability to use geometry.
12	Recall shapes and their relative positions after they have been viewed for only a brief period of time.	Standard 4: Students demonstrate understanding of shape and ability to use geometry.
13	Demonstrate transformations of shapes, e.g., sliding.	Standard 4: Students demonstrate understanding of shape and ability to use geometry.
14	Cover a figure with shapes.	Standard 4: Students demonstrate understanding of shape and ability to use geometry.
15	Use methods and tools to solve a geometric problem, including modeling with objects.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 4: Students demonstrate understanding of shape and ability to use geometry.
16	Attend to another person telling time.	Standard 5: Students demonstrate understanding of measurable attributes and an ability to use measurement processes.
17	Tell time to the hour using an analog clock.	Standard 5: Students demonstrate understanding of measurable attributes and an ability to use measurement processes.
18	Use methods and tools to solve a measurement problem.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 5: Students demonstrate understanding of measurable attributes and an ability to use measurement processes.
19	Read time using a digital clock.	Standard 5: Students demonstrate understanding of measurable attributes and an ability to use measurement processes.
20	Read time using a digital clock (e.g., “It is two twenty-five.”).	Standard 5: Students demonstrate understanding of measurable attributes and an ability to use measurement processes.

Mathematics Grade 6		
Item	**Performance Indicator**	**Standard**
21	Attend to another person modeling mathematical relationships (e.g., modeling different numbers).	Standard 7: Students demonstrate understanding of and an ability to use patterns, relations and functions.
22	Model sets that contain nothing or one or more items (some, none).	Standard 7: Students demonstrate understanding of and an ability to use patterns, relations and functions.
23	Demonstrate that objects defined by a shared attribute form a set to which a number can be applied. (For example, make a set of red triangles. How many are there?)	Standard 7: Students demonstrate understanding of and an ability to use patterns, relations and functions.
24	Model sets of the same/different amounts and compare them.	Standard 7: Students demonstrate understanding of and an ability to use patterns, relations and functions.
25	Use methods and tools to solve a problem involving patterns, relations, or functions, including modeling with objects.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology.

Reading - Grade 7		
Item	**Performance Indicator**	**Standard**
1	Attend to people and literacy materials in a purposeful manner.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
2	Based on the context of a reading selection, identify appropriate definition of multiple-meaning words.	Standard 2: Students apply a range of skills and strategies to read.
3	Identify antonyms.	Standard 2: Students apply a range of skills and strategies to read.
4	Explain the meaning of vocabulary words in the context of a reading selection.	Standard 2: Students apply a range of skills and strategies to read.
5	Identify cultural elements in a reading selection.	Standard 4: Students select, read, and respond to print and nonprint materials for a variety of purposes.
6	Attend to people and literacy materials in a purposeful manner.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
7	Identify the main message of an expository reading selection.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
8	Retell key events in sequence.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
9	Identify common object/symbol when given the function of the object or symbol.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
10	Select important details/facts from reading materials.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
11	Attend to literacy materials from beginning to end.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
12	Identify details related to the main idea.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
13	Identify the main idea of a reading selection.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
14	Identify details related to the main idea.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.

Reading - Grade 7		
Item	**Performance Indicator**	**Standard**
15	Identify common object/symbol when given the function of the object or symbol.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
16	Attend to people and literacy materials in a purposeful manner.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
17	Locate title.	Standard 2: Students apply a range of skills and strategies to read.
18	Use chapter headings to locate information.	Standard 2: Students apply a range of skills and strategies to read.
19	Use text features to move through text in appropriate sequence.	Standard 2: Students apply a range of skills and strategies to read.
20	Answer questions about the main idea of the text.	Standard 2: Students apply a range of skills and strategies to read.
21	Attend to people and literacy materials in a purposeful manner.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
22	Attend to people and literacy materials in a purposeful manner.	Standard 5:Students gather, analyze, synthesize, and evaluate information from a variety of sources, and communicate their findings in ways appropriate for their purposes and audiences.
23	Defend an author's point of view.	Standard 5:Students gather, analyze, synthesize, and evaluate information from a variety of sources, and communicate their findings in ways appropriate for their purposes and audiences.
24	Identify facts in text.	Standard 5:Students gather, analyze, synthesize, and evaluate information from a variety of sources, and communicate their findings in ways appropriate for their purposes and audiences.
25	Identify non-truths within a text.	Standard 5:Students gather, analyze, synthesize, and evaluate information from a variety of sources, and communicate their findings in ways appropriate for their purposes and audiences.

Mathematics Grade 7		
Item	**Performance Indicator**	**Standard**
1	Attend as another person demonstrates an understanding of the concept of some and none.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
2	Associate the number 0 with empty sets in different settings.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
3	Use a quantitative label when making a guess (e.g., a few, many, and seventeen).	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
4	Determine which of two numbers is closer to the quantity in a given set.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
5	Identify a reasonable quantity when guessing the amount in a given set.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
6	p coins by attributes (metal color, size, weight, texture).	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
7	Match coins to like coins and bills to like bills.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
8	Match coins and their values.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
9	Count out an exact amount of money.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.

Mathematics Grade 7		
Item	**Performance Indicator**	**Standard**
10	Round numbers to the nearest 10 (e.g., 27 rounds to 30) or nearest 100.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
11	Attend to another person setting up a number sentence with a box as a placeholder.	Standard 3: Students use algebraic concepts, process, and language to model and solve a variety of real-world and mathematical problems.
12	Recognize that a box is used as a placeholder in a number sentence.	Standard 3: Students use algebraic concepts, process, and language to model and solve a variety of real-world and mathematical problems.
13	Find a simple missing addend represented by a box in a number sentence.	Standard 3: Students use algebraic concepts, process, and language to model and solve a variety of real-world and mathematical problems.
14	Choose correct strategies or procedures to solve an algebraic problem in algebra.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 3: Students use algebraic concepts, process, and language to model and solve a variety of real-world and mathematical problems.
15	Use methods and tools to solve a problem, including drawing pictures, modeling with objects, estimating, using paper and pencil, and using a calculator.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 3: Students use algebraic concepts, process, and language to model and solve a variety of real-world and mathematical problems.

Mathematics Grade 7		
Item	**Performance Indicator**	**Standard**
16	Attend to another person showing relationships between two variables using objects.	Standard 3: Students use algebraic concepts, process, and language to model and solve a variety of real-world and mathematical problems.
17	Recognize a cause-effect relationship between two elements.	Standard 3: Students use algebraic concepts, process, and language to model and solve a variety of real-world and mathematical problems.
18	Choose correct strategies or procedures to solve an algebraic problem.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 3: Students use algebraic concepts, process, and language to model and solve a variety of real-world and mathematical problems.
19	Use methods and tools to solve a problem, including modeling with objects.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 3: Students use algebraic concepts, process, and language to model and solve a variety of real-world and mathematical problems.
20	Demonstrate/ communicate what the relationship is between two elements.	Standard 3: Students use algebraic concepts, process, and language to model and solve a variety of real-world and mathematical problems.
21	Attend to another person collecting data.	Standard 6: The students demonstrate understanding of an ability to use data analysis, probability, and statistics.
22	Given a class of objects, sort into categories.	Standard 6: The students demonstrate understanding of an ability to use data analysis, probability, and statistics.
23	Display data using concrete objects.	Standard 6: The students demonstrate understanding of an ability to use data analysis, probability, and statistics.

Mathematics Grade 7		
Item	**Performance Indicator**	**Standard**
24	Determine which category has the most/ least.	Standard 6: The students demonstrate understanding of an ability to use data analysis, probability, and statistics.
25	Make decisions based on data, a table, or a graph.	Standard 1: Students engage in the mathematical process of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology. Standard 6: The students demonstrate understanding of an ability to use data analysis, probability, and statistics.

Reading - Grade 8		
Item	**Performance Indicator**	**Standard**
1	Anticipates the beginning of a literacy activity (looks toward reader, tolerates headphones, locates literacy materials).	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
2	Identifies resource materials to gain information about words.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
3	Identify fiction.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
4	Selects important details/facts from reading materials.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
5	Identifies words/pictures/symbols/objects used for content communication.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
6	Anticipates the beginning of a literacy activity (looks toward reader, tolerates headphones, locates literacy materials).	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
7	Locates title, chapter, glossary, etc.	Standard 2: Students apply a range of skills and strategies to read.
8	Recognizes vowel letter-sound association.	Standard 2: Students apply a range of skills and strategies to read.
9	Recognizes word order in simple sentences.	Standard 2: Students apply a range of skills and strategies to read.
10	Recognizes familiar printed words.	Standard 2: Students apply a range of skills and strategies to read.
11	Attends to literacy materials.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
12	Identifies words/pictures/symbols/objects to name familiar people.	Standard 2: Students apply a range of skills and strategies to read.
13	Identifies words/pictures/symbols/objects to name familiar places.	Standard 2: Students apply a range of skills and strategies to read.
14	Creates an illustration/photo essay/object box specific to the text.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.

Reading - Grade 8		
Item	**Performance Indicator**	**Standard**
15	Selects literacy materials/books by character or topic.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
16	Responds to own name, spoken/signed, print/picture.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
17	Identifies items on a map.	Standard 4: Student select, read, and respond to print and nonprint material for a variety of purposes.
18	Identifies an appropriate information resource to gain specific information.	Standard 4: Student select, read, and respond to print and nonprint material for a variety of purposes.
19	Explains the meaning of new vocabulary words in the context of a story/reading selection/activity.	Standard 2: Students apply a range of skills and strategies to read.
20	Demonstrates understanding of the difference between an information resource and literature.	Standard 4: Student select, read, and respond to print and nonprint material for a variety of purposes.
21	Anticipates routines or patterns connected to a literacy activity.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
22	Uses listening/observing strategies to comprehend a reading selection.	Standard 2: Students apply a range of skills and strategies to read.
23	Explains the meaning of new vocabulary words in the context of a story/reading selection/activity.	Standard 2: Students apply a range of skills and strategies to read.
24	Uses word recognition skills ad context clues to comprehend text.	Standard 2: Students apply a range of skills and strategies to read.
25	Identifies facts in text.	Standard 5: Students gather, analyze, synthesize, and evaluate information from a variety of sources, and communicate their findings in ways appropriate for their purposes and audiences.

Mathematics - Grade 8		
Item	**Performance Indicator**	Standard
1	Attends to teacher and materials in environment.	Standard 1: Students engage in the mathematical processes of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology.
2	Positions numbers on a number line.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
3	Demonstrate an understanding of the concepts of some/more/less/take away/ all gone/no more/less.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
4	Chooses correct strategies or procedures to solve a number problem.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
5	Produces fractional parts of whole unit and vice versa.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
6	Attends to teacher and materials in environment.	Standard 1: Students engage in the mathematical processes of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology.
7	Demonstrates/communicates what the relationship is between elements.	Standard 3: Students use algebraic concepts, processes, and language to model and solve a variety of real-world and mathematical problems.
8	Shows a relationship between two variables, using ordered pairs or a table; then makes a table.	Standard 3: Students use algebraic concepts, processes, and language to model and solve a variety of real-world and mathematical problems.
9	Given a numerical relationship between two variables, finds the value of one given the other.	Standard 3: Students use algebraic concepts, processes, and language to model and solve a variety of real-world and mathematical problems.
10	Supplies the missing number represented by a blank number sentence, in which the operation might be +, -, or ×.	Standard 3: Students use algebraic concepts, processes, and language to model and solve a variety of real-world and mathematical problems.

Mathematics - Grade 8		
Item	**Performance Indicator**	Standard
11	Attends to teacher and materials in environment.	Standard 1: Students engage in the mathematical processes of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology.
12	Identifies tools associated with measurement.	Standard 5: Students demonstrate understanding of measurable attributes and an ability to use measurement processes.
13	Uses rulers to measure objects that area whole number of inches or centimeters.	Standard 5: Students demonstrate understanding of measurable attributes and an ability to use measurement processes.
14	Uses words to compare distances or lengths.	Standard 5: Students demonstrate understanding of measurable attributes and an ability to use measurement processes.
15	Chooses correct strategies or procedures t solve a measurement problem, measured correctly.	Standard 5: Students demonstrate understanding of measurable attributes and an ability to use measurement processes.
16	Attends to teacher and materials in environment.	Standard 1: Students engage in the mathematical processes of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology.
17	Determines which questions to ask to gain information.	Standard 6: The students demonstrate understanding of and an ability to use data analysis, probability, and statistics.
18	Creates a simple graph, frequency plot, or frequency table using real objects and/or symbols.	Standard 6: The students demonstrate understanding of and an ability to use data analysis, probability, and statistics.
19	Sets up a graph (i.e., labels axes, provides title).	Standard 6: The students demonstrate understanding of and an ability to use data analysis, probability, and statistics.
20	Uses simple tables, charts, or graphs to represent meaningful data.	Standard 6: The students demonstrate understanding of and an ability to use data analysis, probability, and statistics.
21	Attends to teacher and materials in environment.	Standard 1: Students engage in the mathematical processes of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology.

Mathematics - Grade 8		
Item	**Performance Indicator**	Standard
22	Describes features of the data.	Standard 6: The students demonstrate understanding of and an ability to use data analysis, probability, and statistics.
23	Determines which category had the most/least.	Standard 6: The students demonstrate understanding of and an ability to use data analysis, probability, and statistics.
24	Makes decisions based on data, a table or graph.	Standard 6: The students demonstrate understanding of and an ability to use data analysis, probability, and statistics.
25	Explains/shows how decisions were made using a table or graph.	Standard 6: The students demonstrate understanding of and an ability to use data analysis, probability, and statistics.

Science - Grade 8		
Item	**Performance Indicator**	**Standard**
1	Attend to an inclined plane, wheel and axle, lever, and a pulley.	Standard 2: Students demonstrate knowledge of properties, forms, changes and interactions of physical; and chemical systems, and demonstrate the thinking skills associated with this knowledge.
2	Identify a lever.	Standard 2: Students demonstrate knowledge of properties, forms, changes and interactions of physical; and chemical systems, and demonstrate the thinking skills associated with this knowledge.
3	Identify that a pulley can raise an object easier.	Standard 2: Students demonstrate knowledge of properties, forms, changes and interactions of physical; and chemical systems, and demonstrate the thinking skills associated with this knowledge.
4	Identify a force as a push or pull.	Standard 2: Students demonstrate knowledge of properties, forms, changes and interactions of physical; and chemical systems, and demonstrate the thinking skills associated with this knowledge.
5	Identify and predict the results of an investigation.	Standard 1: Students design, conduct, evaluate, and communicate processes and results of scientific investigations, and demonstrate the thinking skills associated with this procedural knowledge.
6	Identify a variable.	Standard 1: Students design, conduct, evaluate, and communicate processes and results of scientific investigations, and demonstrate the thinking skills associated with this procedural knowledge.
7	Attend to common substances or objects.	Standard 2: Students demonstrate knowledge of properties, forms, changes, interactions of physical; and chemical systems, and demonstrate thinking skills associated with knowledge.

Science - Grade 8		
Item	**Performance Indicator**	**Standard**
8	Identify something that needs energy from food.	Standard 3: Students demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment, and demonstrate the thinking skills associated with this knowledge.
9	Identify an animal as something that breathes.	Standard 3: Students demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment, and demonstrate the thinking skills associated with this knowledge.
10	Identify a plant as something that breathes.	Standard 3: Students demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment, and demonstrate the thinking skills associated with this knowledge.
11	Recognize that plants make their own food.	Standard 3: Students demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment, and demonstrate the thinking skills associated with this knowledge.
12	Attend to what the pictures are showing.	Standard 2: Students demonstrate knowledge of properties, forms, changes and interactions of physical; and chemical systems, and demonstrate the thinking skills associated with this knowledge.
13	Identify whether a person or a representation of a person is a baby, child, or adult.	Standard 3: Students demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment, and demonstrate the thinking skills associated with this knowledge.

Science - Grade 8		
Item	**Performance Indicator**	**Standard**
14	Sequence baby, child, young adult, and adult as the life cycle of a human.	Standard 3: Students demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment, and demonstrate the thinking skills associated with this knowledge.
15	Sequence seed, seedling, young plant, mature plant as the life cycle of a flowering plant.	Standard 3: Students demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment, and demonstrate the thinking skills associated with this knowledge.
16	Sequence an egg, caterpillar, chrysalis, and butterfly as the life cycle of a butterfly.	Standard 3: Students demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment, and demonstrate the thinking skills associated with this knowledge.
17	Attend to Earth's changing features.	Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.
18	Identify an island.	Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.
19	Identify a slow change. Identify that the surface of Earth is made of many pieces that move.	Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.
20	Identify a hill or mountain. Identify a slow change. Recognize that mountains can form where pieces collide.	Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.

Science - Grade 8		
Item	**Performance Indicator**	**Standard**
21	Identify a slow change.	Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.
22	Attend to teacher, soil, rock, air, and water.	Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.
23	Distinguish rocks from other objects or materials.	Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.
24	Describe rocks using one to two physical properties. (e.g. color, size, and shape of particles, texture, weight/density).	Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.
25	Distinguish water from other objects or materials.	Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.
26	Identify a rock or mineral being used.	Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.

Reading - Grade 10		
Item	**Performance Indicator**	**Standard**
1	Attends to people and objects in the environment.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
2	Locates a picture/symbol/object when named or signed.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
3	Identifies words/pictures/symbols/objects used for content communication.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
4	Follows directions that contain verbs (points to, looks at, turns page, hits switch).	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
5	Identifies a variety of resources.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
6	Anticipates the beginning of a literacy activity (looks toward reader, tolerates headphones, locates literacy materials).	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
7	Communicates ideas generated from reading.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
8	Explains the meaning of new vocabulary words in the context of a story/reading selection/activity.	Standard 2: Students apply a range of skills and strategies to read.
9	Communicates feelings generated from reading.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
10	Communicates preferred mode for reading/comprehending literacy materials.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
11	Attends to literacy materials.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
12	Identifies details of characters that are the same.	Standard 5: Students gather, analyze, synthesize, and evaluate information from a variety of sources, and communicate their findings in ways appropriate for their purposes and audiences.
13	Explains the meaning of new vocabulary words in the context of a story/reading selection/activity.	Standard 2: Students apply a range of skills and strategies to read.
14	Communicates ideas generated from reading.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.

Reading - Grade 10		
Item	**Performance Indicator**	**Standard**
15	Selects important details/facts from reading materials.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
16	Previews/explores literacy material (looks at, touches, holds, listens),	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
17	Uses text features to comprehend content-area texts; and uses word recognition skills and context clues to comprehend text.	Standard 2: Students apply a range of skills and strategies to read.
18	Demonstrates understanding of a new word based on context of a reading selection.	Standard 2: Students apply a range of skills and strategies to read.
19	Identifies synonyms.	Standard 2: Students apply a range of skills and strategies to read.
20	Uses one course to organize information.	Standard 5: Students gather, analyze, synthesize, and evaluate information from a variety of sources, and communicate their findings in ways appropriate for their purposes and audiences.
21	Responds to own name, spoken/signed, print/picture.	Standard 1: Students construct meaning as they comprehend, interpret, and respond to what they read.
22	Uses listening/observing strategies to comprehend a reading selection.	Standard 2: Students apply a range of skills and strategies to read.
23	Identifies an appropriate information resource to gain specific information.	Standard 4: Students select, read, and respond to print and nonprint material for a variety of purposes.
24	Identifies items on a graph or table.	Standard 4: Students select, read, and respond to print and nonprint material for a variety of purposes.
25	Demonstrates understanding of the difference between an information resource and literature.	Standard 4: Students select, read, and respond to print and nonprint material for a variety of purposes.

Mathematics - Grade 10		
Item	**Performance Indicator**	**Standard**
1	Attends to another person demonstrating concrete materials.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
2	Demonstrates the concept of one.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
3	Demonstrates that a collection of objects has a quantity.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
4	Demonstrates an understanding of addition as combining collections of things.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
5	Determines whether the numbers of identical objects in two structured groups are the same or different; which group has more; and chooses the correct strategies or procedures to solve a number problem.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
6	Attends to another person reviewing a weekly budget chart; anticipates the beginning of a math activity; and attends to materials being displayed.	Standard 1: Students engage in the mathematical processes of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology.
7	Matches bills and their values.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
8	Uses different bill combinations to show equivalent amounts.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
9	Determines how much more money is needed when funds are insufficient.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
10	Determines change when funds are more than cost.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
11	Attends to another person showing relationships between two variables, using objects, pictures, symbols, or numbers.	Standard 3: Students use algebraic concepts, processes, and language to model and solve a variety of real-world and mathematical problems.

Mathematics - Grade 10		
Item	**Performance Indicator**	**Standard**
12	Shows a relationship between two variables, using ordered pairs or a table; then, makes a table.	Standard 3: Students use algebraic concepts, processes, and language to model and solve a variety of real-world and mathematical problems.
13	Given a numerical relationship between two variables, finds the value of one given the other.	Standard 3: Students use algebraic concepts, processes, and language to model and solve a variety of real-world and mathematical problems.
14	Uses or extends a T-table to find the value of a variable.	Standard 3: Students use algebraic concepts, processes, and language to model and solve a variety of real-world and mathematical problems.
15	Demonstrates an understanding of division, using concrete materials.	Standard 2: Students demonstrate understanding of and an ability to use numbers and operations.
16	Attends to another person reviewing a series of functional signs representing different shapes; anticipates the beginning of a math activity; and attends to materials being displayed.	Standard 1: Students engage in the mathematical processes of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology.
17	Recognizes properties of two-dimensional shapes.	Standard 4: Students demonstrate understanding of shape and an ability to use geometry.
18	Identifies circles, squares, triangles, ovals, and rectangles regardless of their orientation or general shape.	Standard 4: Students demonstrate understanding of shape and an ability to use geometry.
19	Follows navigational directions.	Standard 4: Students demonstrate understanding of shape and an ability to use geometry.
20	Recalls shapes and their relative positions after they have been viewed for only a brief period of time.	Standard 4: Students demonstrate understanding of shape and an ability to use geometry.
21	Attends to another person making patterns and to a person describing patterns.	Standard 7: Students demonstrate understanding of and an ability to use patterns, relations and functions.
22	Groups/sorts objects into sets.	Standard 7: Students demonstrate understanding of and an ability to use patterns, relations and functions.
23	Demonstrates that objects defined by a shared attribute form a set to which a number can be applied.	Standard 7: Students demonstrate understanding of and an ability to use patterns, relations and functions.

Mathematics - Grade 10		
Item	**Performance Indicator**	**Standard**
24	Models mathematical problems.	Standard 7: Students demonstrate understanding of and an ability to use patterns, relations and functions.
25	Uses models, tables, and graphs to make decisions.	Standard 7: Students demonstrate understanding of and an ability to use patterns, relations and functions.

Science - Grade 10		
Item	**Performance Indicator**	**Standard**
1	Attend to temperature changes (heat) being produced by rubbing.	Standard 2: Students demonstrate knowledge of properties, forms, changes and interactions of physical; and chemical systems, and demonstrate the thinking skills associated with this knowledge.
2	Identify that temperature changes (heat) can be produced by a heat source (e.g. burner, fire).	Standard 2: Students demonstrate knowledge of properties, forms, changes and interactions of physical; and chemical systems, and demonstrate the thinking skills associated with this knowledge.
3	Identify that temperature changes (heat) can move from one object to another.	Standard 2: Students demonstrate knowledge of properties, forms, changes and interactions of physical; and chemical systems, and demonstrate the thinking skills associated with this knowledge.
4	Identify the changes in matter from solid to liquid to gas as temperature increases or from gas to liquid to solid as temperature decreases.	Standard 2: Students demonstrate knowledge of properties, forms, changes and interactions of physical; and chemical systems, and demonstrate the thinking skills associated with this knowledge.
5	Identify the changes in matter from solid to liquid to gas as temperature increases or from gas to liquid to solid as temperature decreases.	Standard 2: Students demonstrate knowledge of properties, forms, changes and interactions of physical; and chemical systems, and demonstrate the thinking skills associated with this knowledge.
6	Recognize that the model represents an element.	Standard 2: Students demonstrate knowledge of properties, forms, changes and interactions of physical; and chemical systems, and demonstrate the thinking skills associated with this knowledge.
7	Attend to something moving.	Standard 2: Students demonstrate knowledge of properties, forms, changes and interactions of physical; and chemical systems, and demonstrate the thinking skills associated with this knowledge.
8	Recognize that motion is caused by outside forces.	Standard 2: Students demonstrate knowledge of properties, forms, changes and interactions of physical, chemical systems, and demonstrate thinking skills associated with this knowledge.

Science - Grade 10		
Item	**Performance Indicator**	**Standard**
9	Recognize that motion is caused by outside forces. (e.g. a push causes something to move)	Standard 2: Students demonstrate knowledge of properties, forms, changes and interactions of physical; and chemical systems, and demonstrate the thinking skills associated with this knowledge.
10	Demonstrate that some objects are attracted or repelled by magnets, and some objects are not affected by magnets.	Standard 2: Students demonstrate knowledge of properties, forms, changes and interactions of physical; and chemical systems, and demonstrate the thinking skills associated with this knowledge.
11	Recognize that motion is caused by outside forces. (e.g. a push causes something to move).	Standard 2: Students demonstrate knowledge of properties, forms, changes and interactions of physical; and chemical systems, and demonstrate the thinking skills associated with this knowledge.
12	Attend to cells.	Standard 3: Students demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment, and demonstrate the thinking skills associated with this knowledge.
13	Recognize bacteria/germs.	Standard 3: Students demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment, and demonstrate the thinking skills associated with this knowledge.
14	Identify a microscope.	Standard 3: Students demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment, and demonstrate the thinking skills associated with this knowledge.
15	Identify one or two places where bacteria/germs might be found.	Standard 3: Students demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment, and demonstrate the thinking skills associated with this knowledge.

Science - Grade 10		
Item	**Performance Indicator**	**Standard**
16	Identify that bacteria/germs cause some diseases.	Standard 3: Students demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment, and demonstrate the thinking skills associated with this knowledge.
17	Recognize that medical treatment received is a benefit of scientific or technological innovation.	Standard 5: Students understand how scientific knowledge and technological developments impact today's societies and cultures.
18	Attend to weather measurement instruments.	Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.
19	Identify the thermometer in preparation for reading the temperature from it.	Standard 1: Students design, conduct, evaluate, and communicate processes and results of scientific investigations, and demonstrate Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.
20	Read a thermometer.	Standard 1: Students design, conduct, evaluate, and communicate processes and results of scientific investigations, and demonstrate the thinking skills associated with this procedural knowledge. Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.
21	Identify the tools and resources needed for the investigation.	Standard 1: Students design, conduct, evaluate, and communicate processes and results of scientific investigations, and demonstrate the thinking skills associated with this procedural knowledge.

Science - Grade 10		
Item	**Performance Indicator**	**Standard**
22	Get information about the weather from a weather report.	Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.
23	Attend to the Sun, Moon, and stars.	Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.
24	Identify the Sun.	Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.
25	Recognize a simple telescope.	Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.
26	Identify that light and heat come from the Sun.	Standard 1: Students design, conduct, evaluate, and communicate processes and results of scientific investigations, and demonstrate the thinking skills associated with this procedural knowledge. Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.
27	Given an investigation, identify the things that change in the investigation.	Standard 1: Students design, conduct, evaluate, and communicate processes and results of scientific investigations, and demonstrate the thinking skills associated with this procedural knowledge.
28	Identify that light and heat come from the sun.	Standard 4: Students demonstrate knowledge of the composition, processes and interactions of Earth's systems and other objects in space, and demonstrate the thinking skills associated with this knowledge.

Appendix G—ITEM LEVEL CLASSICAL STATISTICS

Table G-1. 2009–10 Montana CRT-Alternate: Item Level Classical Statistics—Mathematics

Grade	*Item*	*Difficulty*	*Discrimination*
3	100001	0.96	0.71
	100002	0.93	0.77
	100003	0.93	0.78
	100004	0.88	0.64
	100005	0.91	0.58
	100006	0.97	0.81
	100007	0.81	0.66
	100008	0.83	0.73
	100009	0.94	0.67
	100010	0.78	0.59
	100011	0.95	0.65
	100012	0.94	0.81
	100013	0.89	0.75
	100014	0.75	0.36
	100015	0.96	0.69
	100016	0.93	0.59
	100017	0.82	0.62
	100018	0.62	0.46
	100019	0.68	0.25
	100020	0.68	0.4
	100021	0.97	0.81
	100022	0.85	0.73
	100023	0.82	0.6
	100024	0.87	0.54
	100025	0.7	0.41
4	100001	0.97	0.58
	100002	0.88	0.69
	100003	0.86	0.72
	100004	0.71	0.59
	100005	0.78	0.74
	100006	0.95	0.61
	100007	0.86	0.69
	100008	0.71	0.69
	100009	0.71	0.77
	100010	0.64	0.66
	100011	0.9	0.61
	100012	0.8	0.74
	100013	0.64	0.58
	100014	0.65	0.67
	100015	0.64	0.64
	100016	0.94	0.67
	100017	0.76	0.74
	100018	0.62	0.71
	100019	0.76	0.63
	100020	0.74	0.69
	100021	0.97	0.62
	100022	0.91	0.74
	100023	0.76	0.6
	100024	0.68	0.34
	100025	0.72	0.58
5	100001	0.92	0.71
	100002	0.87	0.91
	100003	0.82	0.79
	100004	0.83	0.59
	100005	0.81	0.75
	100006	0.93	0.75

continued

Grade	Item	Difficulty	Discrimination
	100007	0.89	0.89
	100008	0.78	0.77
	100009	0.8	0.75
	100010	0.74	0.73
	100011	0.94	0.77
	100012	0.86	0.86
	100013	0.85	0.86
	100014	0.75	0.56
	100015	0.75	0.72
5	100016	0.94	0.7
	100017	0.84	0.84
	100018	0.83	0.87
	100019	0.78	0.69
	100020	0.81	0.67
	100021	0.95	0.51
	100022	0.84	0.81
	100023	0.77	0.74
	100024	0.8	0.74
	100025	0.83	0.73
	100001	0.98	0.38
	100002	0.83	0.83
	100003	0.84	0.87
	100004	0.8	0.77
	100005	0.78	0.68
	100006	0.94	0.37
	100007	0.8	0.82
	100008	0.8	0.84
	100009	0.73	0.85
	100010	0.69	0.71
	100011	0.95	0.48
	100012	0.78	0.81
6	100013	0.82	0.89
	100014	0.83	0.84
	100015	0.87	0.82
	100016	0.95	0.48
	100017	0.77	0.91
	100018	0.65	0.81
	100019	0.8	0.85
	100020	0.83	0.83
	100021	0.94	0.56
	100022	0.8	0.87
	100023	0.79	0.94
	100024	0.84	0.83
	100025	0.81	0.86
	100001	1	-
	100002	0.91	0.64
	100003	0.81	0.61
	100004	0.8	0.72
	100005	0.75	0.73
7	100006	0.99	0.36
	100007	0.89	0.55
	100008	0.84	0.73
	100009	0.61	0.66
	100010	0.45	0.51
	100011	0.99	0.36

continued

Grade	Item	Difficulty	Discrimination
7	100012	0.72	0.56
	100013	0.68	0.69
	100014	0.74	0.68
	100015	0.7	0.7
	100016	0.99	0.36
	100017	0.86	0.83
	100018	0.84	0.83
	100019	0.83	0.77
	100020	0.82	0.73
	100021	0.99	0.36
	100022	0.85	0.7
	100023	0.92	0.73
	100024	0.86	0.72
	100025	0.85	0.67
8	100001	0.96	0.4
	100002	0.83	0.77
	100003	0.65	0.64
	100004	0.66	0.75
	100005	0.71	0.66
	100006	0.98	0.53
	100007	0.84	0.77
	100008	0.63	0.69
	100009	0.72	0.69
	100010	0.76	0.73
	100011	0.99	0.41
	100012	0.82	0.75
	100013	0.67	0.65
	100014	0.72	0.68
	100015	0.65	0.64
	100016	0.96	0.59
	100017	0.73	0.61
	100018	0.77	0.73
	100019	0.68	0.65
	100020	0.7	0.64
	100021	0.99	0.41
	100022	0.73	0.77
	100023	0.8	0.78
	100024	0.76	0.71
	100025	0.73	0.59
10	100001	0.96	0.6
	100002	0.9	0.9
	100003	0.88	0.95
	100004	0.83	0.87
	100005	0.83	0.76
	100006	0.94	0.68
	100007	0.84	0.92
	100008	0.83	0.92
	100009	0.75	0.75
	100010	0.79	0.68
	100011	0.95	0.63
	100012	0.79	0.88
	100013	0.78	0.85
	100014	0.78	0.75
	100015	0.71	0.39
	100016	0.97	0.53

continued

Grade	Item	Difficulty	Discrimination
	100017	0.88	0.89
	100018	0.86	0.86
	100019	0.81	0.82
	100020	0.83	0.74
10	100021	0.95	0.64
	100022	0.88	0.85
	100023	0.86	0.95
	100024	0.92	0.91
	100025	0.89	0.69

Table G-2. 2009–10 Montana CRT-Alternate: Item Level Classical Statistics—Reading

Grade	Item	Difficulty	Discrimination
	100001	0.93	0.58
	100002	0.77	0.54
	100003	0.78	0.62
	100004	0.81	0.63
	100005	0.71	0.43
	100006	0.93	0.69
	100007	0.86	0.76
	100008	0.83	0.65
	100009	0.88	0.51
	100010	0.7	0.25
	100011	0.97	0.77
	100012	0.81	0.63
3	100013	0.95	0.85
	100014	0.84	0.58
	100015	0.91	0.66
	100016	0.95	0.63
	100017	0.73	0.55
	100018	0.74	0.54
	100019	0.71	0.2
	100020	0.81	0.56
	100021	0.96	0.68
	100022	0.81	0.6
	100023	0.93	0.67
	100024	0.85	0.54
	100025	0.88	0.43
	100001	0.97	0.38
	100002	0.83	0.83
	100003	0.8	0.77
	100004	0.83	0.77
	100005	0.73	0.54
	100006	0.93	0.71
	100007	0.82	0.75
	100008	0.79	0.83
4	100009	0.73	0.56
	100010	0.74	0.56
	100011	0.95	0.64
	100012	0.57	0.55
	100013	0.73	0.74
	100014	0.77	0.7
	100015	0.88	0.73
	100016	0.94	0.59
	100017	0.82	0.67

continued

Grade	Item	Difficulty	Discrimination
4	100018	0.67	0.66
	100019	0.71	0.7
	100020	0.8	0.66
	100021	0.94	0.6
	100022	0.79	0.8
	100023	0.86	0.82
	100024	0.82	0.68
	100025	0.84	0.64
5	100001	0.91	0.73
	100002	0.73	0.61
	100003	0.71	0.68
	100004	0.72	0.38
	100005	0.74	0.42
	100006	0.96	0.68
	100007	0.88	0.8
	100008	0.84	0.76
	100009	0.86	0.61
	100010	0.85	0.69
	100011	0.94	0.82
	100012	0.7	0.68
	100013	0.7	0.62
	100014	0.86	0.76
	100015	0.56	0.42
	100016	0.95	0.73
	100017	0.76	0.62
	100018	0.89	0.82
	100019	0.81	0.65
	100020	0.8	0.56
	100021	0.94	0.82
	100022	0.85	0.79
	100023	0.81	0.78
	100024	0.87	0.66
	100025	0.65	0.48
6	100001	0.98	0.35
	100002	0.84	0.76
	100003	0.82	0.75
	100004	0.65	0.63
	100005	0.86	0.67
	100006	0.97	0.46
	100007	0.82	0.8
	100008	0.8	0.75
	100009	0.72	0.67
	100010	0.74	0.73
	100011	0.97	0.49
	100012	0.82	0.86
	100013	0.79	0.84
	100014	0.88	0.84
	100015	0.87	0.81
	100016	0.98	0.37
	100017	0.8	0.82
	100018	0.76	0.84
	100019	0.79	0.87
	100020	0.85	0.8
	100021	0.98	0.37
	100022	0.79	0.84

continued

Grade	Item	Difficulty	Discrimination
6	100023	0.81	0.82
	100024	0.73	0.75
	100025	0.83	0.69
7	100001	1	-
	100002	0.74	0.57
	100003	0.6	0.36
	100004	0.73	0.51
	100005	0.73	0.65
	100006	0.99	0.16
	100007	0.89	0.65
	100008	0.8	0.58
	100009	0.91	0.72
	100010	0.86	0.65
	100011	1	-
	100012	0.9	0.73
	100013	0.91	0.75
	100014	0.83	0.7
	100015	0.88	0.78
	100016	0.98	0.12
	100017	0.81	0.68
	100018	0.79	0.69
	100019	0.81	0.72
	100020	0.86	0.72
	100021	1	-
	100022	0.78	0.68
	100023	0.84	0.55
	100024	0.76	0.63
	100025	0.9	0.74
8	100001	0.98	0.34
	100002	0.74	0.69
	100003	0.65	0.67
	100004	0.83	0.79
	100005	0.76	0.68
	100006	1	-
	100007	0.81	0.71
	100008	0.71	0.61
	100009	0.73	0.7
	100010	0.83	0.72
	100011	0.99	0.06
	100012	0.76	0.77
	100013	0.79	0.79
	100014	0.73	0.68
	100015	0.78	0.69
	100016	0.99	0.1
	100017	0.71	0.62
	100018	0.78	0.77
	100019	0.85	0.75
	100020	0.63	0.62
	100021	0.98	0.34
	100022	0.78	0.69
	100023	0.81	0.77
	100024	0.83	0.73
	100025	0.75	0.75
10	100001	0.97	0.57
	100002	0.77	0.75

continued

Grade	Item	Difficulty	Discrimination
10	100003	0.86	0.92
	100004	0.85	0.81
	100005	0.92	0.78
	100006	0.97	0.57
	100007	0.8	0.8
	100008	0.86	0.83
	100009	0.73	0.72
	100010	0.91	0.69
	100011	0.96	0.56
	100012	0.86	0.89
	100013	0.71	0.75
	100014	0.77	0.77
	100015	0.78	0.67
	100016	0.97	0.57
	100017	0.76	0.8
	100018	0.75	0.68
	100019	0.86	0.86
	100020	0.82	0.65
	100021	0.94	0.6
	100022	0.83	0.89
	100023	0.81	0.88
	100024	0.92	0.74
	100025	0.81	0.79

Table G-3. 2009–10 Montana CRT-Alternate: Item Level Classical Statistics—Science

Grade	*Item*	*Difficulty*	*Discrimination*
4	100001	0.96	0.41
	100002	0.8	0.54
	100003	0.8	0.67
	100004	0.86	0.66
	100005	0.69	0.36
	100006	0.96	0.64
	100007	0.9	0.86
	100008	0.89	0.76
	100009	0.91	0.77
	100010	0.85	0.56
	100011	0.8	0.67
	100012	0.96	0.44
	100013	0.93	0.85
	100014	0.88	0.83
	100015	0.9	0.81
	100016	0.9	0.75
	100017	0.97	0.65
	100018	0.88	0.79
	100019	0.82	0.78
	100020	0.83	0.72
	100021	0.63	0.38
	100022	0.97	0.51
	100023	0.8	0.77
	100024	0.79	0.79
	100025	0.73	0.64
	100026	0.82	0.78
8	100001	0.99	0.4
	100002	0.75	0.63
	100003	0.83	0.79
	100004	0.86	0.81
	100005	0.8	0.64
	100006	0.7	0.63
	100007	0.99	0.06
	100008	0.74	0.77
	100009	0.86	0.81
	100010	0.84	0.82
	100011	0.86	0.57
	100012	0.99	0.32
	100013	0.95	0.56
	100014	0.71	0.69
	100015	0.73	0.82
	100016	0.64	0.6
	100017	0.97	0.32
	100018	0.88	0.7
	100019	0.7	0.71
	100020	0.71	0.68
	100021	0.7	0.47
	100022	0.97	0.22
	100023	0.93	0.76
	100024	0.85	0.8
	100025	0.92	0.79
	100026	0.85	0.68
10	100001	0.93	0.66
	100002	0.84	0.79
	100003	0.88	0.89
	100004	0.89	0.72

continued

Grade	Item	Difficulty	Discrimination
10	100005	0.82	0.65
	100006	0.78	0.7
	100007	0.95	0.68
	100008	0.87	0.78
	100009	0.8	0.76
	100010	0.88	0.89
	100011	0.91	0.75
	100012	0.97	0.56
	100013	0.84	0.87
	100014	0.89	0.91
	100015	0.84	0.85
	100016	0.95	0.89
	100017	0.95	0.78
	100018	0.94	0.73
	100019	0.85	0.91
	100020	0.86	0.89
	100021	0.91	0.92
	100022	0.95	0.77
	100023	0.95	0.67
	100024	0.92	0.74
	100025	0.87	0.88
	100026	0.84	0.86
	100027	0.85	0.83
	100028	0.92	0.83

Appendix H—Item Level Score Distributions

Table H-1. 2009–10 Montana CRT-Alternate: Item Level Score Distributions—Mathematics

Grade	Maximum Points	Item	Percent of Students at Score Point				
			0	*1*	*2*	*3*	*4*
3	4	100001	4	0	0	0	96
	4	100002	2	4	1	2	90
	4	100003	3	2	1	7	87
	4	100004	0	10	1	13	75
	4	100005	1	3	6	10	80
	4	100006	3	0	0	0	97
	4	100007	3	8	12	15	62
	4	100008	2	7	12	17	62
	4	100009	0	2	4	10	83
	4	100010	0	13	14	19	53
	4	100011	5	0	0	0	95
	4	100012	2	2	3	2	90
	4	100013	2	5	4	12	76
	4	100014	2	16	13	18	51
	4	100015	0	3	0	7	90
	4	100016	7	0	0	0	93
	4	100017	2	13	8	10	67
	4	100018	2	13	35	34	16
	4	100019	0	20	11	44	24
	4	100020	4	18	18	21	39
	4	100021	3	0	0	0	97
	4	100022	2	4	8	22	64
	4	100023	7	8	5	14	66
	4	100024	2	8	3	13	73
	4	100025	6	18	15	16	46
4	4	100001	3	0	0	0	97
	4	100002	4	7	1	7	80
	4	100003	2	9	3	17	69
	4	100004	7	16	10	20	48
	4	100005	3	12	12	15	58
	4	100006	5	0	0	0	95
	4	100007	2	10	4	11	73
	4	100008	9	12	7	32	40
	4	100009	4	18	12	17	48
	4	100010	5	24	17	17	36
	4	100011	10	0	0	0	90
	4	100012	4	10	9	15	62
	4	100013	9	19	16	20	36
	4	100014	6	21	13	29	31
	4	100015	7	23	14	18	38
	4	100016	6	0	0	0	94
	4	100017	3	12	13	23	49
	4	100018	9	22	17	18	34
	4	100019	2	17	8	22	51
	4	100020	4	13	12	24	46
	4	100021	3	0	0	0	97
	4	100022	2	6	3	3	85
	4	100023	5	13	10	18	54
	4	100024	4	15	16	32	32

continued

Grade	Maximum Points	Item	Percent of Students at Score Point				
			0	*1*	*2*	*3*	*4*
4	4	100025	4	15	15	19	46
	4	100001	8	0	0	0	92
	4	100002	4	7	5	8	77
	4	100003	4	12	6	10	69
	4	100004	1	10	10	12	67
	4	100005	1	10	13	12	63
	4	100006	7	0	0	0	93
	4	100007	3	4	8	5	81
	4	100008	4	13	10	14	60
	4	100009	1	15	10	10	64
	4	100010	4	19	8	16	53
	4	100011	6	0	0	0	94
	4	100012	3	11	3	7	77
5	4	100013	4	8	5	12	72
	4	100014	4	14	12	18	52
	4	100015	3	19	10	12	56
	4	100016	6	0	0	0	94
	4	100017	5	5	10	9	72
	4	100018	5	9	6	9	72
	4	100019	0	18	10	15	57
	4	100020	1	11	11	16	61
	4	100021	5	0	0	0	95
	4	100022	4	5	8	17	67
	4	100023	4	8	12	29	48
	4	100024	1	14	11	12	62
	4	100025	0	11	12	9	68
	4	100001	2	0	0	0	98
	4	100002	5	10	6	7	73
	4	100003	5	9	7	3	76
	4	100004	6	14	3	9	68
	4	100005	2	16	7	14	60
	4	100006	6	0	0	0	94
	4	100007	5	10	10	10	65
	4	100008	5	13	5	14	64
	4	100009	7	19	5	13	56
	4	100010	8	20	8	11	52
	4	100011	5	0	0	0	95
6	4	100012	9	9	7	9	66
	4	100013	8	9	3	5	75
	4	100014	7	8	5	5	75
	4	100015	2	9	5	5	79
	4	100016	5	0	0	0	95
	4	100017	8	15	5	8	65
	4	100018	11	18	8	23	40
	4	100019	8	11	5	5	72
	4	100020	4	10	6	10	70
	4	100021	6	0	0	0	94
	4	100022	7	14	3	5	72
	4	100023	9	10	3	9	68

continued

Grade	Maximum Points	Item	Percent of Students at Score Point				
			0	*1*	*2*	*3*	*4*
6	4	100024	6	7	4	14	69
	4	100025	4	17	4	4	72
7	4	100001	0	0	0	0	100
	4	100002	0	8	3	8	81
	4	100003	1	14	7	19	60
	4	100004	3	11	8	21	57
	4	100005	2	14	18	13	53
	4	100006	1	0	0	0	99
	4	100007	0	8	5	12	75
	4	100008	2	12	7	7	73
	4	100009	5	26	24	11	34
	4	100010	9	45	19	11	17
	4	100011	1	0	0	0	99
	4	100012	5	17	14	17	48
	4	100013	3	26	11	15	45
	4	100014	0	25	8	15	52
	4	100015	2	22	15	17	45
	4	100016	1	0	0	0	99
	4	100017	2	11	7	2	78
	4	100018	2	14	3	10	71
	4	100019	2	13	4	12	69
	4	100020	2	14	7	9	68
	4	100021	1	0	0	0	99
	4	100022	1	13	3	11	72
	4	100023	1	4	6	5	84
	4	100024	2	8	7	10	73
	4	100025	0	9	8	18	65
8	4	100001	4	0	0	0	96
	4	100002	5	9	6	9	72
	4	100003	5	23	17	14	41
	4	100004	1	25	11	33	29
	4	100005	3	23	8	19	47
	4	100006	3	0	0	0	98
	4	100007	4	11	5	4	76
	4	100008	6	25	19	9	41
	4	100009	4	18	12	18	49
	4	100010	3	18	12	8	59
	4	100011	1	0	0	0	99
	4	100012	3	11	9	13	65
	4	100013	9	15	16	19	41
	4	100014	4	15	13	24	44
	4	100015	5	18	14	35	27
	4	100016	4	0	0	0	96
	4	100017	3	15	18	20	45
	4	100018	5	11	10	19	55
	4	100019	4	13	21	32	31
	4	100020	3	27	9	13	49
	4	100021	1	0	0	0	99
	4	100022	6	14	13	19	49

continued

Grade	Maximum Points	Item	Percent of Students at Score Point				
			0	*1*	*2*	*3*	*4*
	4	100023	4	13	5	16	63
8	4	100024	3	13	11	24	49
	4	100025	0	21	13	21	45
	4	100001	4	0	0	0	96
	4	100002	7	3	2	2	87
	4	100003	8	5	1	4	83
	4	100004	7	4	10	9	71
	4	100005	7	5	5	15	68
	4	100006	6	0	0	0	94
	4	100007	10	1	4	13	72
	4	100008	11	1	4	13	71
	4	100009	11	5	10	22	53
	4	100010	5	8	10	20	57
	4	100011	5	0	0	0	95
	4	100012	12	4	4	18	63
10	4	100013	12	5	7	10	65
	4	100014	9	6	8	18	60
	4	100015	5	12	19	22	42
	4	100016	3	0	0	0	97
	4	100017	9	0	4	3	84
	4	100018	8	3	3	10	76
	4	100019	7	9	7	10	68
	4	100020	6	5	6	15	68
	4	100021	5	0	0	0	95
	4	100022	8	2	3	3	84
	4	100023	12	0	1	6	81
	4	100024	8	0	1	1	90
	4	100025	3	3	5	13	76

Table H-2. 2009–10 Montana CRT-Alternate: Item Level Score Distributions—Reading

Grade	Maximum Points	Item	Percent of Students at Score Point				
			0	*1*	*2*	*3*	*4*
	4	100001	7	0	0	0	93
	4	100002	5	9	10	23	53
	4	100003	3	9	12	26	50
	4	100004	1	8	13	20	58
	4	100005	3	11	20	27	38
	4	100006	7	0	0	0	93
	4	100007	4	4	5	13	73
3	4	100008	4	9	3	16	67
	4	100009	0	8	7	12	73
	4	100010	2	20	15	20	43
	4	100011	3	0	0	0	97
	4	100012	4	3	13	24	55
	4	100013	2	1	3	3	90
	4	100014	0	9	9	18	64
	4	100015	0	3	7	11	79

continued

Grade	Maximum Points	Item	Percent of Students at Score Point				
			0	*1*	*2*	*3*	*4*
3	4	100016	5	0	0	0	95
	4	100017	3	12	17	25	42
	4	100018	2	12	12	35	38
	4	100019	3	14	13	34	34
	4	100020	7	9	6	11	68
	4	100021	4	0	0	0	96
	4	100022	6	9	11	7	68
	4	100023	2	2	4	3	88
	4	100024	0	10	7	17	66
	4	100025	0	6	10	12	72
4	4	100001	3	0	0	0	97
	4	100002	3	12	4	13	68
	4	100003	5	7	10	19	59
	4	100004	3	12	4	12	69
	4	100005	3	17	12	21	47
	4	100006	7	0	0	0	93
	4	100007	4	11	6	12	67
	4	100008	3	15	8	12	62
	4	100009	2	18	13	19	47
	4	100010	1	10	19	31	40
	4	100011	5	0	0	0	95
	4	100012	5	25	22	29	18
	4	100013	9	7	14	22	47
	4	100014	2	13	12	21	52
	4	100015	0	10	3	11	76
	4	100016	6	0	0	0	94
	4	100017	5	7	11	8	68
	4	100018	6	15	19	23	37
	4	100019	3	16	14	24	42
	4	100020	3	13	7	15	62
	4	100021	6	0	0	0	94
	4	100022	4	12	8	15	61
	4	100023	4	6	0	20	69
	4	100024	2	8	11	17	62
	4	100025	0	12	9	11	68
5	4	100001	9	0	0	0	91
	4	100002	5	6	24	22	43
	4	100003	4	14	18	24	40
	4	100004	3	13	23	15	46
	4	100005	2	14	16	22	45
	4	100006	4	0	0	0	96
	4	100007	4	5	5	10	77
	4	100008	4	9	4	16	68
	4	100009	4	10	1	7	78
	4	100010	0	8	8	20	64
	4	100011	6	0	0	0	94
	4	100012	4	11	19	32	34
	4	100013	8	15	13	20	45
	4	100014	1	10	7	9	73

continued

Grade	Maximum Points	Item	Percent of Students at Score Point				
			0	*1*	*2*	*3*	*4*
5	4	100015	4	32	21	22	21
	4	100016	5	0	0	0	95
	4	100017	5	14	10	16	56
	4	100018	3	5	8	4	81
	4	100019	4	10	7	16	63
	4	100020	2	12	11	13	62
	4	100021	6	0	0	0	94
	4	100022	4	8	5	9	74
	4	100023	4	7	12	17	60
	4	100024	0	9	7	10	73
	4	100025	5	22	14	23	35
6	4	100001	2	0	0	0	98
	4	100002	6	8	3	9	74
	4	100003	5	9	8	10	68
	4	100004	7	13	28	21	32
	4	100005	1	8	5	16	70
	4	100006	3	0	0	0	97
	4	100007	5	8	10	10	67
	4	100008	3	16	1	15	65
	4	100009	5	16	15	15	49
	4	100010	10	13	6	14	57
	4	100011	3	0	0	0	97
	4	100012	5	12	3	12	69
	4	100013	7	10	6	12	65
	4	100014	4	7	2	8	79
	4	100015	1	10	6	7	76
	4	100016	2	0	0	0	98
	4	100017	5	11	11	7	67
	4	100018	7	17	5	6	65
	4	100019	5	13	8	12	62
	4	100020	2	11	5	7	74
	4	100021	2	0	0	0	98
	4	100022	5	8	10	19	58
	4	100023	5	8	8	16	63
	4	100024	9	13	11	9	58
	4	100025	3	10	5	17	65
7	4	100001	0	0	0	0	100
	4	100002	4	13	11	29	43
	4	100003	3	28	22	22	25
	4	100004	2	14	16	24	43
	4	100005	3	18	14	13	52
	4	100006	1	0	0	0	99
	4	100007	1	5	9	10	76
	4	100008	0	13	11	22	55
	4	100009	0	6	6	9	80
	4	100010	2	7	6	16	69
	4	100011	0	0	0	0	100
	4	100012	0	7	3	13	78
	4	100013	0	6	6	9	80
	4	100014	1	15	6	10	69

Grade	Maximum Points	Item	Percent of Students at Score Point				
			0	*1*	*2*	*3*	*4*
	4	100015	1	11	3	5	81
	4	100016	2	0	0	0	98
	4	100017	2	15	8	9	66
	4	100018	2	10	15	17	56
	4	100019	2	14	9	12	64
7	4	100020	1	10	7	10	73
	4	100021	0	0	0	0	100
	4	100022	0	17	10	17	56
	4	100023	0	9	9	19	63
	4	100024	1	19	8	17	55
	4	100025	0	7	5	9	80
	4	100001	2	0	0	0	98
	4	100002	1	19	12	20	48
	4	100003	5	14	20	38	23
	4	100004	3	11	6	13	68
	4	100005	3	11	18	19	50
	4	100006	0	0	0	0	100
	4	100007	3	15	6	9	68
	4	100008	3	15	19	24	40
	4	100009	4	20	8	16	53
	4	100010	1	9	11	15	63
	4	100011	1	0	0	0	99
	4	100012	1	13	18	18	51
8	4	100013	1	13	8	26	53
	4	100014	1	18	18	16	48
	4	100015	0	14	15	14	57
	4	100016	1	0	0	0	99
	4	100017	3	15	20	19	43
	4	100018	4	14	5	22	56
	4	100019	3	8	8	10	72
	4	100020	3	27	18	19	33
	4	100021	3	0	0	0	98
	4	100022	5	13	8	16	59
	4	100023	5	8	10	13	65
	4	100024	3	10	10	8	70
	4	100025	1	18	13	13	55
	4	100001	3	0	0	0	97
	4	100002	7	9	8	21	55
	4	100003	8	2	3	9	78
	4	100004	6	6	3	15	70
	4	100005	3	2	4	6	85
	4	100006	3	0	0	0	97
10	4	100007	8	7	7	15	64
	4	100008	7	2	6	11	74
	4	100009	8	10	12	25	46
	4	100010	2	2	5	12	79
	4	100011	4	0	0	0	96
	4	100012	7	5	4	5	79
	4	100013	12	9	7	26	45

continued

Grade	Maximum Points	Item	Percent of Students at Score Point				
			0	*1*	*2*	*3*	*4*
10	4	100014	8	6	11	20	55
	4	100015	6	4	15	21	54
	4	100016	3	0	0	0	97
	4	100017	9	6	11	19	55
	4	100018	10	6	13	17	54
	4	100019	8	2	6	10	75
	4	100020	4	7	8	19	62
	4	100021	6	0	0	0	94
	4	100022	9	5	3	11	72
	4	100023	9	2	7	17	64
	4	100024	4	2	3	6	85
	4	100025	3	6	11	21	58

Table H-3. 2009–10 Montana CRT-Alternate: Item Level Score Distributions—Science

Grade	Maximum Points	Item	Percent of Students at Score Point				
			0	*1*	*2*	*3*	*4*
4	4	100001	4	0	0	0	96
	4	100002	4	10	10	15	61
	4	100003	3	12	8	17	60
	4	100004	3	5	9	10	73
	4	100005	7	19	12	19	44
	4	100006	4	0	0	0	96
	4	100007	3	4	5	2	85
	4	100008	3	8	2	2	85
	4	100009	1	7	1	11	80
	4	100010	0	12	7	9	72
	4	100011	1	15	9	13	62
	4	100012	4	0	0	0	96
	4	100013	2	4	2	3	88
	4	100014	3	7	2	11	77
	4	100015	3	5	3	4	84
	4	100016	1	9	1	8	81
	4	100017	3	0	0	0	97
	4	100018	2	8	2	12	76
	4	100019	3	7	5	28	57
	4	100020	2	11	7	14	66
	4	100021	2	22	27	19	30
	4	100022	3	0	0	0	97
	4	100023	3	11	5	23	57
	4	100024	5	8	11	19	57
	4	100025	1	16	12	30	40
	4	100026	3	11	9	8	69
8	4	100001	1	0	0	0	99
	4	100002	5	14	10	19	53
	4	100003	4	10	4	16	67
	4	100004	6	5	4	9	76
	4	100005	3	12	12	13	62

continued

Grade	Maximum Points	Item	Percent of Students at Score Point				
			0	*1*	*2*	*3*	*4*
8	4	100006	4	17	15	23	41
	4	100007	1	0	0	0	99
	4	100008	5	16	5	23	51
	4	100009	5	8	3	8	77
	4	100010	6	5	5	14	70
	4	100011	0	9	11	9	71
	4	100012	1	0	0	0	99
	4	100013	1	3	3	4	90
	4	100014	5	14	16	20	44
	4	100015	5	18	6	22	49
	4	100016	4	22	18	26	31
	4	100017	3	0	0	0	97
	4	100018	3	9	3	8	78
	4	100019	5	19	13	16	47
	4	100020	4	22	8	18	49
	4	100021	1	19	16	25	39
	4	100022	3	0	0	0	97
	4	100023	3	4	3	1	90
	4	100024	4	8	5	10	73
	4	100025	3	6	1	1	88
	4	100026	4	9	5	8	74
10	4	100001	7	0	0	0	93
	4	100002	7	3	6	14	70
	4	100003	7	2	3	9	79
	4	100004	4	3	3	13	78
	4	100005	3	6	11	21	59
	4	100006	3	8	16	21	52
	4	100007	5	0	0	0	95
	4	100008	6	2	6	13	74
	4	100009	8	7	7	11	66
	4	100010	7	1	4	9	80
	4	100011	3	2	5	9	81
	4	100012	3	0	0	0	97
	4	100013	8	2	7	10	72
	4	100014	7	2	1	7	83
	4	100015	8	4	5	11	73
	4	100016	3	1	2	3	91
	4	100017	2	1	3	3	91
	4	100018	6	0	0	0	94
	4	100019	9	3	5	4	79
	4	100020	10	1	3	7	79
	4	100021	7	1	1	3	88
	4	100022	1	3	1	4	91
	4	100023	5	0	0	0	95
	4	100024	7	0	0	1	92
	4	100025	7	3	3	8	79
	4	100026	9	2	7	10	73
	4	100027	6	2	8	13	71
	4	100028	3	1	5	8	83

Appendix I—Differential Item Functioning Results

Table I-1. 2009–10 Montana CRT-Alternate: Number of Items Classified as "Low" or "High" DIF Overall and by Group Favored—Mathematics

Grade	Reference Group	Focal Group	Number of Items	Number "Low"			Number "High"		
				Total	Favoring Reference	Favoring Focal	Total	Favoring Reference	Favoring Focal
3	Male	Female	25	0	0	0	0	0	0
	White	Hispanic	25	0	0	0	0	0	0
	White	Native American	25	0	0	0	0	0	0
	No Disability	Disability	25	0	0	0	0	0	0
	Not Low Income	Low Income	25	0	0	0	0	0	0
4	Male	Female	25	0	0	0	0	0	0
	White	Hispanic	25	0	0	0	0	0	0
	White	Native American	25	0	0	0	0	0	0
	No Disability	Disability	25	0	0	0	0	0	0
	Not Low Income	Low Income	25	0	0	0	0	0	0
5	Male	Female	25	0	0	0	0	0	0
	White	Hispanic	25	0	0	0	0	0	0
	White	Native American	25	0	0	0	0	0	0
	No Disability	Disability	25	0	0	0	0	0	0
	Not Low Income	Low Income	25	0	0	0	0	0	0
6	Male	Female	25	0	0	0	0	0	0
	White	Hispanic	25	0	0	0	0	0	0
	White	Native American	25	0	0	0	0	0	0
	No Disability	Disability	25	0	0	0	0	0	0
	Not Low Income	Low Income	25	0	0	0	0	0	0
7	Male	Female	25	1	1	0	0	0	0
	White	Hispanic	25	0	0	0	0	0	0
	White	Native American	25	0	0	0	0	0	0
	No Disability	Disability	25	0	0	0	0	0	0
	Not Low Income	Low Income	25	3	2	1	1	1	0
8	Male	Female	25	0	0	0	0	0	0
	White	Hispanic	25	0	0	0	0	0	0
	White	Native American	25	0	0	0	0	0	0
	No Disability	Disability	25	0	0	0	0	0	0
	Not Low Income	Low Income	25	0	0	0	0	0	0
10	Male	Female	25	0	0	0	0	0	0
	White	Hispanic	25	0	0	0	0	0	0
	White	Native American	25	0	0	0	0	0	0
	No Disability	Disability	25	0	0	0	0	0	0
	Not Low Income	Low Income	25	2	1	1	0	0	0

Table I-2. 2009–10 Montana CRT-Alternate: Number of Items Classified as "Low" or "High" DIF Overall and by Group Favored—Reading

Grade	Reference Group	Focal Group	Number of Items	Number "Low"			Number "High"		
				Total	Favoring Reference	Favoring Focal	Total	Favoring Reference	Favoring Focal
3	Male	Female	25	0	0	0	0	0	0
	White	Hispanic	25	0	0	0	0	0	0
	White	Native American	25	0	0	0	0	0	0
	No Disability	Disability	25	0	0	0	0	0	0
	Not Low Income	Low Income	25	1	0	1	0	0	0
4	Male	Female	25	0	0	0	0	0	0
	White	Hispanic	25	0	0	0	0	0	0
	White	Native American	25	0	0	0	0	0	0
	No Disability	Disability	25	0	0	0	0	0	0
	Not Low Income	Low Income	25	0	0	0	0	0	0
5	Male	Female	25	0	0	0	0	0	0
	White	Hispanic	25	0	0	0	0	0	0
	White	Native American	25	0	0	0	0	0	0
	No Disability	Disability	25	0	0	0	0	0	0
	Not Low Income	Low Income	25	0	0	0	0	0	0
6	Male	Female	25	0	0	0	0	0	0
	White	Hispanic	25	0	0	0	0	0	0
	White	Native American	25	0	0	0	0	0	0
	No Disability	Disability	25	0	0	0	0	0	0
	Not Low Income	Low Income	25	0	0	0	0	0	0
7	Male	Female	25	1	1	0	1	0	1
	White	Hispanic	25	0	0	0	0	0	0
	White	Native American	25	0	0	0	0	0	0
	No Disability	Disability	25	0	0	0	0	0	0
	Not Low Income	Low Income	25	5	4	1	0	0	0
8	Male	Female	25	0	0	0	0	0	0
	White	Hispanic	25	0	0	0	0	0	0
	White	Native American	25	0	0	0	0	0	0
	No Disability	Disability	25	0	0	0	0	0	0
	Not Low Income	Low Income	25	0	0	0	0	0	0
10	Male	Female	25	1	0	1	0	0	0
	White	Hispanic	25	0	0	0	0	0	0
	White	Native American	25	0	0	0	0	0	0
	No Disability	Disability	25	0	0	0	0	0	0
	Not Low Income	Low Income	25	0	0	0	1	0	1

Table I-3. 2009–10 Montana CRT-Alternate: Number of Items Classified as "Low" or "High" DIF Overall and by Group Favored—Science

Grade	*Reference Group*	*Focal Group*	*Number of Items*	*Number "Low"*			*Number "High"*		
				Total	*Favoring Reference*	*Favoring Focal*	*Total*	*Favoring Reference*	*Favoring Focal*
4	Male	Female	26	0	0	0	0	0	0
	White	Hispanic	26	0	0	0	0	0	0
	White	Native American	26	0	0	0	0	0	0
	No Disability	Disability	26	0	0	0	0	0	0
	Not Low Income	Low Income	26	0	0	0	0	0	0
8	Male	Female	26	0	0	0	0	0	0
	White	Hispanic	26	0	0	0	0	0	0
	White	Native American	26	0	0	0	0	0	0
	No Disability	Disability	26	0	0	0	0	0	0
	Not Low Income	Low Income	26	0	0	0	0	0	0
10	Male	Female	28	0	0	0	0	0	0
	White	Hispanic	28	0	0	0	0	0	0
	White	Native American	28	0	0	0	0	0	0
	No Disability	Disability	28	0	0	0	0	0	0
	Not Low Income	Low Income	28	0	0	0	0	0	0

Appendix J—SUBGROUP RELIABILITIES

Table J-1. 2009–10 Montana CRT-Alternate: Subgroup Reliabilities—Mathematics

Grade	Group	Number of Students	Raw Score			Alpha	SEM
			Maximum	Average	Standard Deviation		
3	Special Education	86	100	84.26	17.92	0.9	5.54
	Free/Reduced Lunch	61	100	86	16.58	0.91	4.96
	American Indian or Alaska Native	20	100	90.85	7.1	0.8	3.15
	Asian	3	100				
	Hispanic	4	100				
	Black or African American	0	100				
	White	65	100	84.91	13.79	0.78	6.51
	Native Hawaiian or Other Pacific Island	0	100				
	LEP/ELL	5	100				
	All Students	92	100	84.49	17.47	0.9	5.56
4	Special Education	93	100	77.11	21.32	0.93	5.62
	Free/Reduced Lunch	55	100	80.29	19.85	0.92	5.75
	American Indian or Alaska Native	15	100	79.13	20.53	0.95	4.79
	Asian	1	100				
	Hispanic	1	100				
	Black or African American	0	100				
	White	77	100	76.57	21.68	0.93	5.81
	Native Hawaiian or Other Pacific Island	0	100				
	LEP/ELL	4	100				
	All Students	94	100	77.16	21.22	0.93	5.64
5	Special Education	97	100	83.65	22.05	0.94	5.41
	Free/Reduced Lunch	74	100	88.86	14.92	0.91	4.49
	American Indian or Alaska Native	19	100	87.53	19.99	0.97	3.27
	Asian	1	100				
	Hispanic	3	100				
	Black or African American	2	100				
	White	78	100	81.37	24.35	0.95	5.38
	Native Hawaiian or Other Pacific Island	0	100				
	LEP/ELL	5	100				
	All Students	103	100	82.7	23.16	0.96	4.87
6	Special Education	84	100	81.74	25.51	0.96	4.81
	Free/Reduced Lunch	55	100	82.95	27.04	0.97	4.90
	American Indian or Alaska Native	17	100	88.29	20.63	0.97	3.44
	Asian	0	100				
	Hispanic	1	100				

continued

Grade	Group	Number of Students	Raw Score			Alpha	SEM
			Maximum	Average	Standard Deviation		
6	Black or African American	1	100				
	White	69	100	79.7	26.57	0.96	5.58
	Native Hawaiian or Other Pacific Island	0	100				
	LEP/ELL	7	100				
	All Students	88	100	81.13	25.81	0.96	5.03
7	Special Education	99	100	81.96	17.74	0.94	4.40
	Free/Reduced Lunch	59	100	81.9	18.6	0.93	4.75
	American Indian or Alaska Native	19	100	75.58	23.1	0.94	5.64
	Asian	0	100				
	Hispanic	2	100				
	Black or African American	2	100				
	White	78	100	83.46	15.87	0.94	3.97
	Native Hawaiian or Other Pacific Island	0	100				
	LEP/ELL	4	100				
	All Students	102	100	82.1	17.58	0.94	4.38
8	Special Education	76	100	76.57	22.23	0.93	5.93
	Free/Reduced Lunch	44	100	79.64	19.29	0.92	5.38
	American Indian or Alaska Native	10	100	71.4	22.17	0.93	5.77
	Asian	1	100				
	Hispanic	3	100				
	Black or African American	3	100				
	White	63	100	78.75	20.83	0.92	5.71
	Native Hawaiian or Other Pacific Island	1	100				
	LEP/ELL	2	100				
	All Students	81	100	76.17	22.05	0.93	5.77
10	Special Education	106	100	83.4	25.99	0.87	9.30
	Free/Reduced Lunch	50	100	83.14	25.5	0.81	11.05
	American Indian or Alaska Native	11	100	81.64	30.68	0.71	16.39
	Asian	0	100				
	Hispanic	6	100				
	Black or African American	2	100				
	White	88	100	84.05	25.6	0.87	9.19
	Native Hawaiian or Other Pacific Island	0	100				
	LEP/ELL	2	100				
	All Students	107	100	83.53	25.91	0.87	9.27

Table J-2. 2009–10 Montana CRT-Alternate: Subgroup Reliabilities—Reading

Grade	*Group*	*Number of Students*	Raw Score			*Alpha*	*SEM*
			Maximum	*Average*	*Standard Deviation*		
3	Special Education	86	100	82.7	18.18	0.89	6.08
	Free/Reduced Lunch	61	100	83.39	17.48	0.9	5.56
	American Indian or Alaska Native	20	100	90.5	6.68	0.71	3.61
	Asian	3	100				
	Hispanic	4	100				
	Black or African American	0	100				
	White	65	100	83.12	15.04	0.78	7.06
	Native Hawaiian or Other Pacific Island	0	100				
	LEP/ELL	5	100				
	All Students	92	100	82.85	17.8	0.88	6.08
4	Special Education	94	100	79.94	21.73	0.94	5.51
	Free/Reduced Lunch	56	100	84.09	18.92	0.92	5.26
	American Indian or Alaska Native	15	100	81.07	21.69	0.95	5.05
	Asian	1	100				
	Hispanic	1	100				
	Black or African American	0	100				
	White	78	100	79.49	21.94	0.93	5.70
	Native Hawaiian or Other Pacific Island	0	100				
	LEP/ELL	4	100				
	All Students	95	100	79.95	21.61	0.93	5.57
5	Special Education	97	100	80.98	19.46	0.91	5.86
	Free/Reduced Lunch	74	100	85.09	13.18	0.82	5.59
	American Indian or Alaska Native	19	100	84.21	18.07	0.95	4.04
	Asian	1	100				
	Hispanic	3	100				
	Black or African American	2	100				
	White	78	100	78.88	21.84	0.93	5.67
	Native Hawaiian or Other Pacific Island	0	100				
	LEP/ELL	5	100				
	All Students	103	100	80.07	20.69	0.93	5.28
6	Special Education	84	100	81.4	23.21	0.96	4.72
	Free/Reduced Lunch	55	100	81.31	25.91	0.96	4.98
	American Indian or Alaska Native	17	100	84.71	23.1	0.98	3.55
	Asian	0	100				
	Hispanic	1	100				

continued

Grade	Group	Number of Students	Raw Score			Alpha	SEM
			Maximum	Average	Standard Deviation		
6	Black or African American	1	100				
	White	69	100	80.43	23.65	0.95	5.48
	Native Hawaiian or Other Pacific Island	0	100				
	LEP/ELL	7	100				
	All Students	88	100	80.99	23.73	0.96	4.87
7	Special Education	101	100	84.33	15.62	0.93	4.04
	Free/Reduced Lunch	60	100	85.03	15.22	0.92	4.23
	American Indian or Alaska Native	19	100	80.53	18.44	0.95	3.98
	Asian	0	100				
	Hispanic	2	100				
	Black or African American	2	100				
	White	80	100	85.74	14.72	0.92	4.05
	Native Hawaiian or Other Pacific Island	0	100				
	LEP/ELL	4	100				
	All Students	104	100	84.71	15.56	0.93	4.01
8	Special Education	76	100	79.88	20.2	0.93	5.46
	Free/Reduced Lunch	44	100	83.84	17.45	0.89	5.70
	American Indian or Alaska Native	10	100	78.5	18.96	0.85	7.33
	Asian	1	100				
	Hispanic	3	100				
	Black or African American	3	100				
	White	63	100	81.52	18.83	0.93	5.07
	Native Hawaiian or Other Pacific Island	1	100				
	LEP/ELL	2	100				
	All Students	81	100	79.51	20.23	0.93	5.31
10	Special Education	106	100	82.86	23.97	0.91	7.15
	Free/Reduced Lunch	50	100	82.84	22.15	0.87	7.86
	American Indian or Alaska Native	11	100	81.09	30.59	0.79	14.14
	Asian	0	100				
	Hispanic	6	100				
	Black or African American	2	100				
	White	88	100	83.26	23.67	0.9	7.62
	Native Hawaiian or Other Pacific Island	0	100				
	LEP/ELL	2	100				
	All Students	107	100	82.95	23.88	0.91	7.15

Table J-3. 2009–10 Montana CRT-Alternate: Subgroup Reliabilities—Science

Grade	*Group*	*Number of Students*	Raw Score			*Alpha*	*SEM*
			Maximum	*Average*	*Standard Deviation*		
4	Special Education	92	104	87.34	21.61	0.94	5.23
	Free/Reduced Lunch	54	104	91.09	18.26	0.92	5.02
	American Indian or Alaska Native	15	104	88.2	19.15	0.95	4.09
	Asian	1	104				
	Hispanic	1	104				
	Black or African American	0	104				
	White	76	104	86.59	22.36	0.94	5.58
	Native Hawaiian or Other Pacific Island	0	104				
	LEP/ELL	4	104				
	All Students	93	104	87.11	21.6	0.94	5.23
8	Special Education	76	104	84.84	23.11	0.92	6.55
	Free/Reduced Lunch	44	104	89.48	17.39	0.87	6.20
	American Indian or Alaska Native	10	104	81.2	23.62	0.88	8.17
	Asian	1	104				
	Hispanic	3	104				
	Black or African American	3	104				
	White	63	104	87.7	19.89	0.92	5.61
	Native Hawaiian or Other Pacific Island	1	104				
	LEP/ELL	2	104				
	All Students	81	104	84.46	22.74	0.92	6.40
10	Special Education	106	112	96.81	28.02	0.95	6.19
	Free/Reduced Lunch	50	112	97.04	27.96	0.96	5.31
	American Indian or Alaska Native	11	112	91.91	35.73	0.68	20.07
	Asian	0	112				
	Hispanic	6	112				
	Black or African American	2	112				
	White	88	112	97.45	27.86	0.95	6.06
	Native Hawaiian or Other Pacific Island	0	112				
	LEP/ELL	2	112				
	All Students	107	112	96.91	27.9	0.95	6.19

Appendix K—Reporting Category Reliabilities

Table K-1. 2009–10 Montana CRT-Alternate: Reliabilities by Reporting Category—Mathematics

Grade	*Reporting Category*	*Number of Items*	Raw Score			*Alpha*	*SEM*
			Maximum	*Average*	*Standard Deviation*		
3	Numbers and Operations	10	40	32.98	7.1	0.8	3.20
	Geometry	10	40	34.91	7.36	0.85	2.84
	Patterns, Relations, and Functions	5	20	16.6	4.38	0.78	2.07
4	Problem Solving	5	20	18.85	4.01	0.9	1.26
	Numbers and Operations	8	32	24.35	7.76	0.88	2.71
	Data Analysis, Statistics, and Probability	8	32	21.98	8.27	0.89	2.79
	Patterns, Relations, and Functions	4	16	11.98	3.85	0.66	2.23
5	Numbers and Operations	10	40	33.12	9.73	0.91	2.89
	Algebra	5	20	16.42	4.9	0.82	2.08
	Measurement	10	40	33.17	9.07	0.9	2.86
6	Numbers and Operations	10	40	32.39	9.92	0.92	2.84
	Geometry	5	20	16.68	5.69	0.86	2.14
	Measurement	5	20	15.67	5.84	0.86	2.17
	Patterns, Relations, and Functions	5	20	16.39	5.82	0.88	2.06
7	Numbers and Operations	10	40	32.12	6.76	0.85	2.58
	Algebra	10	40	32.35	8.36	0.89	2.83
	Data Analysis, Statistics, and Probability	5	20	17.63	3.96	0.77	1.89
8	Problem Solving	5	20	19.31	3.27	0.86	1.23
	Numbers and Operations	4	16	11.27	4.33	0.8	1.94
	Algebra	4	16	11.42	4.71	0.82	2.01
	Measurement	4	16	11.19	4.41	0.82	1.90
	Data Analysis, Statistics, and Probability	8	32	22.99	8.26	0.88	2.89
10	Problem Solving	2	8	7.66	1.47	0.8	0.66
	Numbers and Operations	10	40	32.07	11.13	0.9	3.58
	Algebra	4	16	13.07	4.41	0.81	1.90
	Geometry	4	16	13.18	4.8	0.84	1.93
	Patterns, Relations, and Functions	5	20	17.55	5.42	0.84	2.19

Table K-2. 2009–10 Montana CRT-Alternate: Reliabilities by Reporting Category—Reading

Grade	*Reporting Category*	*Number of Items*	Raw Score			*Alpha*	*SEM*
			Maximum	*Average*	*Standard Deviation*		
3	Students construct meaning as they comprehend, interpret, and respond to what they read.	13	52	45.62	9.62	0.88	3.27
	Students apply a range of skills and strategies to read.	8	32	25.46	6.57	0.79	3.01
	Students select, read, and respond to print and nonprint material for a variety of purposes.	4	16	11.77	3.47	0.58	2.26
4	Students construct meaning as they comprehend, interpret, and respond to what they read.	9	36	31.87	7.14	0.9	2.23
	Students apply a range of skills and strategies to read.	12	48	35.78	11.71	0.9	3.65
	Students select, read, and respond to print and nonprint material for a variety of purposes.	3	12	8.85	3.16	0.74	1.62
	Students gather, analyze, synthesize, and evaluate information from a variety of sources, and communicate their findings in ways appropriate for their purposes and audiences.	1	4	3.44	1.07	0.74	0.55
5	Students construct meaning as they comprehend, interpret, and respond to what they read.	13	52	43.5	10.83	0.91	3.19
	Students apply a range of skills and strategies to read.	8	32	25.19	7.54	0.86	2.85
	Students select, read, and respond to print and nonprint material for a variety of purposes.	4	16	11.38	3.73	0.62	2.29
6	Students construct meaning as they comprehend, interpret, and respond to what they read.	13	52	44.19	10.84	0.91	3.31
	Students apply a range of skills and strategies to read.	7	28	21.58	7.65	0.92	2.11
	Students select, read, and respond to print and nonprint material for a variety of purposes.	1	4	3.17	1.4	0.92	0.39
	Students gather, analyze, synthesize, and evaluate information from a variety of sources, and communicate their findings in ways appropriate for their purposes and audiences.	4	16	12.05	4.78	0.84	1.90
7	Students construct meaning as they comprehend, interpret, and respond to what they read.	13	52	47.56	6.62	0.85	2.57
	Students apply a range of skills and strategies to read.	7	28	21.22	6.06	0.85	2.35
	Students select, read, and respond to print and nonprint material for a variety of purposes.	1	4	2.9	1.32	0.85	0.51
	Students gather, analyze, synthesize, and evaluate information from a variety of sources, and communicate their findings in ways appropriate for their purposes and audiences.	4	16	13.03	3.45	0.74	1.74
8	Students construct meaning as they comprehend, interpret, and respond to what they read.	11	44	37.27	7.09	0.79	3.28
	Students apply a range of skills and strategies to read.	10	40	31.11	9.83	0.92	2.78

continued

Grade	Reporting Category	Number of Items	Raw Score			Alpha	SEM
			Maximum	Average	Standard Deviation		
8	Students select, read, and respond to print and nonprint material for a variety of purposes.	3	12	8.26	3.32	0.74	1.69
	Students gather, analyze, synthesize, and evaluate information from a variety of sources, and communicate their findings in ways appropriate for their purposes and audiences.	1	4	2.86	1.38	0.74	0.70
10	Students construct meaning as they comprehend, interpret, and respond to what they read.	14	56	47.86	12.16	0.89	3.97
	Students apply a range of skills and strategies to read.	6	24	18.93	6.67	0.91	2.01
	Students select, read, and respond to print and nonprint material for a variety of purposes.	3	12	9.7	3.46	0.71	1.86
	Students gather, analyze, synthesize, and evaluate information from a variety of sources, and communicate their findings in ways appropriate for their purposes and audiences.	2	8	6.47	2.45	0.56	1.63

Table K-3. 2009–10 Montana CRT-Alternate: Reliabilities by Reporting Category—Science

Grade	*Reporting Category*	*Number of Items*	Raw Score			*Alpha*	*SEM*
			Maximum	*Average*	*Standard Deviation*		
4	Scientific Investigations	1	4	2.81	1.25	0.74	0.64
	Physical Science	8	32	27	6.05	0.82	2.59
	Life Science	5	20	16.94	5.07	0.81	2.19
	Earth/Space Science	9	36	31.72	7.88	0.91	2.38
	Impact on Society	2	8	6.2	2.5	0.8	1.13
	Historical Development	1	4	2.44	1.26	0.8	0.57
8	Scientific Investigations	2	8	5.78	2.43	0.77	1.18
	Physical Science	6	24	21.43	4.09	0.69	2.28
	Life Science	8	32	24.54	8.37	0.89	2.75
	Earth/Space Science	10	40	32.7	9.4	0.87	3.44
10	Scientific Investigations	5	20	16.85	6.1	0.91	1.83
	Physical Science	11	44	37.29	10.69	0.89	3.50
	Life Science	5	20	17.62	4.94	0.82	2.10
	Earth/Space Science	6	36	31.79	9.09	0.81	3.94
	Impact on Society	1	4	3.51	1.22	0.81	0.53

Appendix L—Decision Accuracy and Consistency Results

Table L-1. 2009–10 Montana CRT-Alternate: Summary of Decision Accuracy (and Consistency) Results—Overall and Conditional on Performance Level

Content area	*Grade*	*Overall*	*Kappa*	*Conditional on level*			
				Novice	*Nearing Proficiency*	*Proficient*	*Advanced*
Mathematics	3	0.70 (0.64)	0.51	0.83 (0.78)	0.56 (0.47)	0.55 (0.50)	0.91 (0.76)
	4	0.77 (0.70)	0.6	0.85 (0.81)	0.67 (0.58)	0.65 (0.57)	0.92 (0.82)
	5	0.82 (0.78)	0.68	0.90 (0.88)	0.46 (0.35)	0.71 (0.67)	0.95 (0.87)
	6	0.77 (0.71)	0.58	0.91 (0.88)	0.75 (0.69)	0.49 (0.38)	0.85 (0.78)
	7	0.85 (0.80)	0.68	0.80 (0.70)	0.80 (0.74)	0.83 (0.82)	0.92 (0.81)
	8	0.80 (0.73)	0.62	0.84 (0.79)	0.65 (0.54)	0.72 (0.65)	0.93 (0.85)
	10	0.79 (0.76)	0.54	0.79 (0.75)	0.51 (0.43)	0.30 (0.23)	0.95 (0.89)
Reading	3	0.77 (0.71)	0.56	0.74 (0.59)	0.75 (0.68)	0.69 (0.65)	0.91 (0.78)
	4	0.78 (0.72)	0.61	0.84 (0.78)	0.72 (0.64)	0.67 (0.60)	0.93 (0.83)
	5	0.82 (0.76)	0.63	0.83 (0.76)	0.74 (0.66)	0.62 (0.52)	0.94 (0.89)
	6	0.87 (0.82)	0.72	0.87 (0.83)	0.75 (0.66)	0.78 (0.73)	0.96 (0.91)
	7	0.89 (0.85)	0.72	0.20 (0.08)	0.80 (0.73)	0.82 (0.78)	0.95 (0.91)
	8	0.83 (0.77)	0.63	0.82 (0.75)	0.67 (0.57)	0.70 (0.62)	0.94 (0.89)
	10	0.71 (0.62)	0.34	0.90 (0.88)	0.44 (0.33)	0.52 (0.35)	0.74 (0.71)
Science	4	0.83 (0.77)	0.64	0.86 (0.82)	0.62 (0.51)	0.65 (0.57)	0.95 (0.90)
	8	0.81 (0.74)	0.61	0.81 (0.73)	0.69 (0.60)	0.69 (0.63)	0.94 (0.86)
	10	0.74 (0.66)	0.37	0.94 (0.93)	0.47 (0.33)	0.40 (0.28)	0.78 (0.76)

Table L-2. 2009–10 Montana CRT-Alternate: Summary of Decision Accuracy (and Consistency) Results—Conditional on Cutpoint

Content area	*Grade*	*Novice/Nearing Proficiency*			*Nearing Proficiency/Proficient*			*Proficient/Advanced*		
		Accuracy (consistency)	*False positive*	*False negative*	*Accuracy (consistency)*	*False positive*	*False negative*	*Accuracy (consistency)*	*False positive*	*False negative*
Mathematics	3	0.93 (0.91)	0.04	0.03	0.90 (0.87)	0.07	0.03	0.86 (0.84)	0.12	0.02
	4	0.95 (0.93)	0.03	0.02	0.92 (0.89)	0.05	0.03	0.91 (0.88)	0.07	0.02
	5	0.96 (0.95)	0.02	0.02	0.95 (0.93)	0.03	0.02	0.91 (0.89)	0.07	0.02
	6	0.97 (0.96)	0.02	0.01	0.95 (0.93)	0.03	0.02	0.85 (0.81)	0.09	0.06
	7	0.99 (0.98)	0.01	0.01	0.95 (0.93)	0.03	0.02	0.91 (0.88)	0.07	0.02
	8	0.96 (0.94)	0.02	0.02	0.93 (0.91)	0.04	0.03	0.91 (0.88)	0.06	0.03
	10	0.95 (0.94)	0.03	0.02	0.93 (0.90)	0.05	0.02	0.88 (0.86)	0.09	0.03
Reading	3	0.98 (0.98)	0.01	0.01	0.92 (0.90)	0.04	0.03	0.87 (0.83)	0.11	0.03
	4	0.96 (0.95)	0.02	0.02	0.93 (0.90)	0.04	0.03	0.89 (0.87)	0.08	0.02
	5	0.97 (0.96)	0.02	0.02	0.93 (0.91)	0.04	0.03	0.91 (0.88)	0.06	0.03
	6	0.98 (0.97)	0.01	0.01	0.96 (0.95)	0.02	0.02	0.93 (0.91)	0.05	0.02
	7	1.00 (1.00)	0	0	0.97 (0.96)	0.02	0.01	0.92 (0.89)	0.05	0.03
	8	0.97 (0.96)	0.01	0.01	0.94 (0.92)	0.03	0.02	0.92 (0.88)	0.05	0.03
	10	0.98 (0.97)	0.01	0.01	0.97 (0.96)	0.02	0.01	0.75 (0.67)	0.06	0.18
Science	4	0.97 (0.95)	0.02	0.02	0.95 (0.93)	0.03	0.02	0.91 (0.89)	0.06	0.03
	8	0.97 (0.96)	0.01	0.01	0.94 (0.92)	0.04	0.03	0.90 (0.87)	0.08	0.03
	10	0.99 (0.98)	0.01	0	0.98 (0.97)	0.01	0.01	0.77 (0.69)	0.07	0.16

Appendix M—REPORT SHELLS

MontCAS
Criterion-Referenced Test-Alternate (CRT-Alt)
Student Report
2010

Letter from Superintendent

Dear Parents/Guardians:

The Montana Comprehensive Assessment System (MontCAS) Criterion-Referenced Test-Alternate (CRT-Alternate) is the state's measure of student performance on the state content standards, which establish goals for what all students should know and be able to do.

Students in grades 3-8 and 10 in Reading and Math and in grades 4, 8, and 10 in Science take the CRT or CRT-Alternate each year. Your student participated in the CRT-Alternate Assessment. The CRT-Alternate measures your student's performance based on alternate achievement standards. The CRT-Alternate is aligned with the Montana state standards for Reading, Mathematics, and Science. Test results are based on teacher observations of your student's performance on specifically designated test items.
This report shows how your student performed on the March 2010 CRT-Alternate. The results of this standards-based assessment are reported in four performance levels: Advanced, Proficient, Nearing Proficiency, and Novice. While some students may not yet meet the standards, keep in mind that the standards are rigorous and challenging. Our long-term goal is for all students to achieve these high standards so that Montana youth will be among the best educated in the world. The staff at your school will be able to provide further information about your student's performance on the CRT-Alternate.

The CRT-Alternate is only one measure of student performance and should be viewed in the context of the student's local programs and other measures. The CRT-Alternate is required by the No Child Left Behind Act and is part of an ongoing statewide educational improvement process. I encourage you to contact your student's school to begin a conversation that will support your student's success.

Sincerely,

Denise Juneau

Denise Juneau
Montana Superintendent of Public Instruction
Montana Office of Public Instruction
PO Box 202501
Helena, Montana 59620-2501
http://www.opi.mt.gov

What can you do to help your student?

It is important to support your student in his or her studies now and throughout his or her future education.

Here are some tips for supporting your student in the completion of his or her schoolwork:

- Have regular discussions with your student's teacher(s) to see what you can do at home to support your student's work in school, such as making sure homework is done.
- Discuss with your student the subjects in which he or she needs improvement. Talk about whether there has been a noticeable improvement. If not, find out why.
- Ask your student to explain what he or she is studying. These conversations help you to follow your student's progress and help your student to remember what he or she has learned.
- Make sure your student gets enough rest, eats properly, and arrives at school on time every day. Send your student to school prepared to learn.

What is the MontCAS Criterion-Referenced Test-Alternate (CRT-Alt)?

The Montana Comprehensive Assessment System (MontCAS) Criterion-Referenced Test-Alternate (CRT-Alt) is the state's measure of student performance on the state content standards, which establish goals for what all students should know and be able to do.
Students in grades 3-8 and 10 in Math and Reading and in grades 4, 8, and 10 in Science take the CRT or the CRT-Alt each year. Your student participated in the CRT-Alt. The CRT-Alt measures your student's performance based on alternate achievement standards. The CRT-Alt is aligned with the Montana state standards for Mathematics, Reading, and Science. Test results are based on teacher observations of your student's performance on specifically designed test items.

Who takes the CRT-Alt?

How a student with disabilities will participate in the state's accountability system is decided by the student's Individualized Education Program (IEP) team. Only students considered to have a significant cognitive disability are eligible to take the alternate assessment. IEP teams are informed that the decision to have a student participate in the CRT-Alt may not be based on excessive or extended absence; disability category; social, cultural, or economic factors; the amount of time receiving special education services; or academic achievement significantly lower than his or her same-age peers.

What subjects were tested in spring 2010?

Mathematics	Grades 3-8 and 10
Reading	Grades 3-8 and 10
Science	Grades 4, 8, and 10

What types of test questions are on the CRT-Alt?

- Multiple-choice questions: Students choose the correct answer from four options. A student's score is determined by the level of support, or scaffolding, required to choose a correct response. Each student has an opportunity to first answer without assistance to assure the opportunity to get the highest score possible.
- Other questions may ask the students to categorize items, place items on charts, etc.
- All choices are in the form of pictures, words, numbers, or a combination of these. The test administrator can adapt these materials, such as enlarging the text, to help a student access the content on the test.

How are the CRT-Alt results used?

MontCAS CRT-Alt test results are used for the following purposes:

- to assist educators in planning improvements to curriculum and instruction
- to determine whether schools are helping their students meet the state content standards

Where can you find more information?

Montana test results for all schools and districts in the state:
http://opi.mt.gov/Curriculum/MontCAS/index.html

Montana requirements for the participation of students with disabilities on the CRT: http://opi.mt.gov/Curriculum/MontCAS/#gpm1_7

OPI contact: Judy Snow, State Assessment Director, 406-444-3656, jsnow@mt.gov

Name: NESTI, DEANNA
SASID: D04100004

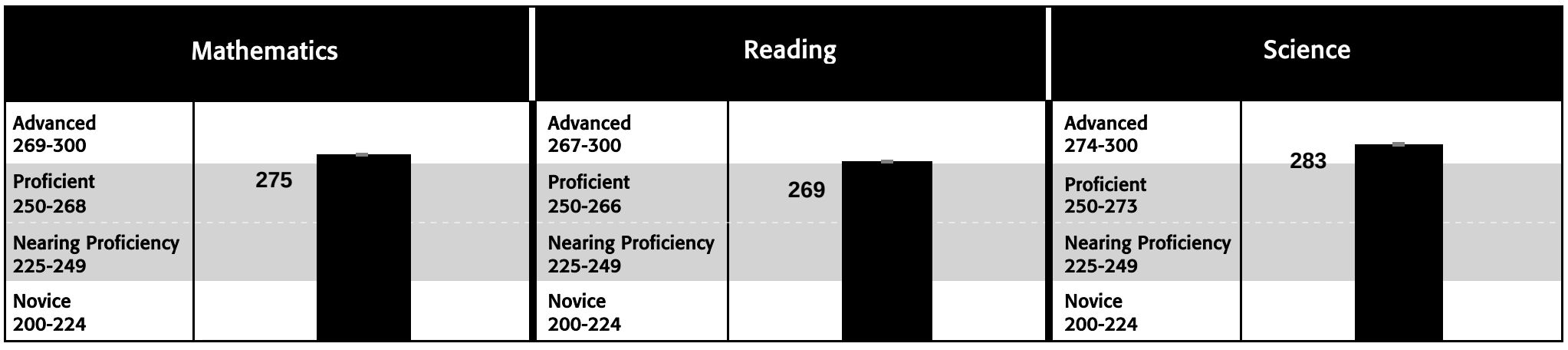
Date of Birth: 05/05/2000
Grade: 04

School: Demonstration School 2
System: Demonstration District A

Your student's performance level and score in each content area

Display of scores and probable range of scores

In the figure below, the top of the black bar indicates your student's score on each test. The smaller gray bar shows the range of likely scores your student could have received if he or she had taken the test multiple times.



Your student's Mathematics Scaled Score is **275** which is at the **Advanced Level.** Your student's possible range of scores is from 274 to 276.

This level denotes superior performance.

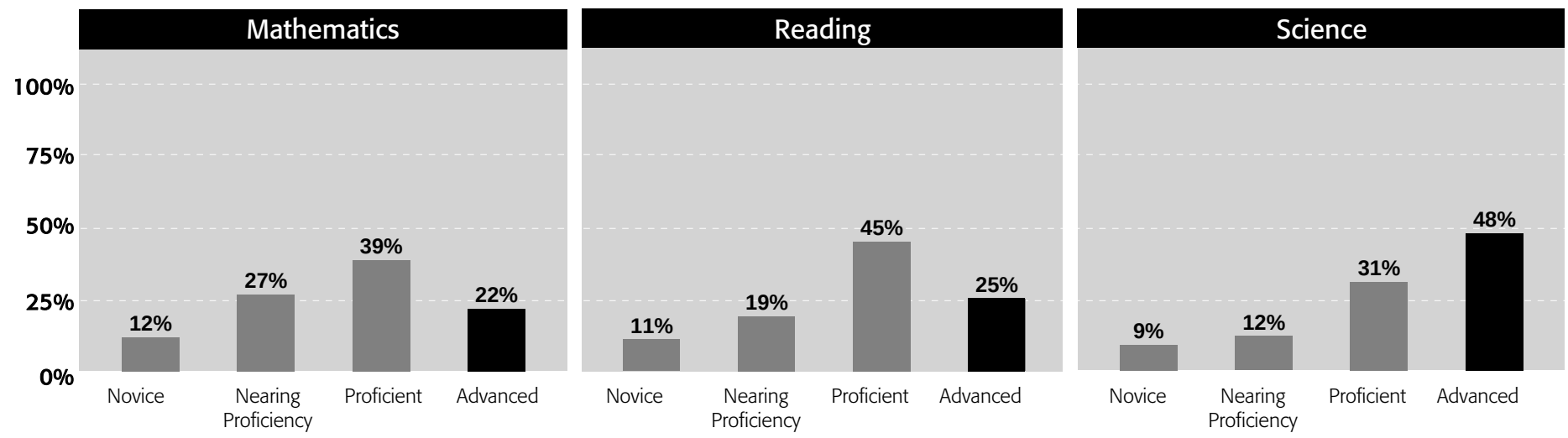
Your student's Reading Scaled Score is **269** which is at the **Advanced Level.** Your student's possible range of scores is from 268 to 270.

This level denotes superior performance.

Your student's Science Scaled Score is **283** which is at the **Advanced Level.** Your student's possible range of scores is from 282 to 284.

This level denotes superior performance.

Your student's performance level compared to the State



Black bar indicates the percent of students in your student's performance level for each subject

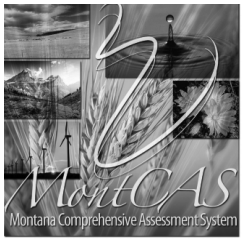
Scores on Montana Content Standards

CRT results are reported for Montana Content Standards in Mathematics, Reading, and Science to provide standard-specific information about the student's achievement. The results can be used to show the student's relative performance on the standards within a content area.

Mathematics	Total Possible Points	Points Earned by Your Student	Range of Points Earned by Students Who Have Achieved Proficiency in the State
1. Problem Solving	This standard is assessed within the frameworks of standard 2-7.		
2. Numbers and Operations	32	32	17-32
6. Data Analysis, Statistics, and Probability	32	32	20-29
7. Patterns, Relations, and Functions	16	14	9-16

Reading	Total Possible Points	Points Earned by Your Student	Range of Points Earned by Students Who Have Achieved Proficiency in the State
1. Students contruct meaning as they comprehend, interpret, and respond to what they read.	36	36	29-36
2. Students apply a range of skills and strategies to read.	48	46	32-48
3. Students set goals, monitor, and evaluate their reading progress.	This standard is not measurable in a statewide assessment.		
4. Students select, read, and respond to print and nonprint material for a variety of purposes.	12	12	7-12
5. Students gather, analyze, synthesize, and evaluate information from a variety of sources, and communicate their findings in ways appropriate for their purposes and audiences.	4	4	3-4

Science	Total Possible Points	Points Earned by Your Student	Range of Points Earned by Students who have achieved proficiency in the State
1. Scientific Investigations	4	3	1-4
2. Physical Science	32	32	23-31
3. Life Science	20	20	13-20
4. Earth/Space Science	36	36	29-36
5. Impact on Society	Subscores are not reported for this standard.		
6. Historical Development	Subscores are not reported for this standard.		



CRT-Alternate

C o n f i d e n t i a l

Roster and Item-Level Report

Reading

Class: DEMA
School: Demonstration School 1
System: Demonstration District A
Grade: 08

																											Total Test Results							
																											Points Earned by Standard					Total Points Earned	Scaled Score	Performance Level
	Item Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Standard 1	Standard 2	Standard 3	Standard 4	Standard 5			
	Content Standard	1	1	1	1	1	1	2	2	2	2	1	2	2	1	1	1	4	4	2	4	1	2	2	2	5								
	Tasklet	1	1	1	1	1	2	2	2	2	2	3	3	3	3	3	4	4	4	4	4	5	5	5	5	5								
Name/Student ID	Total Possible Points	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	**44**	**40**		**12**	**4**	**100**		
GODFREY, AARON	D08100007	4	3	1	2	3	4	4	3	2	4	4	3	4	3	2	4	1	1	2	1	4	4	3	2	1	34	31		3	1	69	254	P
Class Average		4	3	1	2	3	4	4	3	2	4	4	3	4	3	2	4	1	1	2	1	4	4	3	2	1	34	31		3	1	69		
School Average		4	3	1	2	3	4	4	3	2	4	4	3	4	3	2	4	1	1	2	1	4	4	3	2	1	34	31		3	1	69		
System Average		4	2.4	2.3	2.9	3	4	2.9	2.9	2.3	3.1	4	2.9	2.5	2.6	2.7	4	2.3	2.4	3	1.8	4	2.6	2.8	2.4	2.8	36	27		7	3	72		
State Average		3.9	3	2.6	3.3	3	4	3.2	2.8	2.9	3.3	4	3.1	3.2	2.9	3.1	4	2.8	3.1	3.4	2.5	3.9	3.1	3.3	3.3	3	37	31		8	3	80		

This standard is not measurable in a statewide assessment.

The sum of the points for each standard may exceed the total points, as some items correlate with more than one standard.

† Student did not complete the assessment. ¥ Not in school and/or system for full academic year.

§ Teacher halted the administration of one or more of the five tasklets after the student scored a 0 for three consecutive items within a tasklet on two different test administrations. Any completed tasklets have been scored and are reflected in the student's scaled score.

Legend for CRT-Alternate Roster and Item-Level Report
Reading

Item Number: This number represents the order of the question on the test.

Content Standard: This shows the standard each question correlates with.

1. Students construct meaning as they comprehend, interpret, and respond to what they read.
2. Students apply a range of skills and strategies to read.
3. Students set goals, monitor, and evaluate their reading progress.
4. Students select, read, and respond to print and nonprint material for a variety of purposes.
5. Students gather, analyze, synthesize, and evaluate information from a variety of sources, and communicate their findings in ways appropriate for their purposes and audiences.

Tasklet: A group of items centered on a short activity.

Total Possible Points: This number indicates the total possible points awarded for each item (4 points) and each standard.

Name/Student ID: Each student's name is listed along with his/her state assigned ID, followed by response information for each item on the test.

For all items, a number (0, 1, 2, 3, or 4) indicates how many points the student earned for that item.

Summary of Scores: Averages are listed for various groups of students (e.g., class, school, and system).

For all items, the average of the number of points awarded to all students in that group is shown.

Total Points Earned: This is the student's raw score for the test.

Scaled Score: This column shows the score that corresponds to the total points earned.

Performance Level: This column shows the performance level into which the student's scores fall.

Advanced (A) The student at the Advanced level accurately and independently demonstrates the ability to carry out comprehensive content specific performance indicators.

Proficient (P) The student at the Proficient level, given limited prompting, demonstrates the ability to respond accurately in performing a wide variety of content specific performance indicators.

Nearing Proficiency (NP) The student at the Nearing Proficiency level, given moderate prompting, demonstrates the ability to respond accurately in performing a narrow set of content specific performance indicators.

Novice (N) The student at the Novice level, given physical assistance and/or modeling, is supported to participate in content specific performance indicators.

Montana Alternate Assessment Scoring Rubric
Performance (independence and accuracy)

Used to score every item during the structured observation test activity.

4	3	2	1	0
Student responds accurately and with no assistance.	Student responds accurately when teacher clarifies, highlights important information or reduces the range of the options to three.	Student responds accurately when teacher provides basic yes/no questions or forced choices between two options.	Student is guided to correct response by teacher (e.g., modeling the correct response or providing full physical assistance).	Student does not respond or actively resists.

MontCAS CRT-Alternate

School: Demonstration School 2
System: Demonstration District A
Grade: 10
Spring 2010

Science

School Summary Report

I. Distribution of Scores

Perf. Level	Scores	School			System			State		
		N	% of Students	% of Students in Cat.	N	% of Students	% of Students in Cat.	N	% of Students	% of Students in Cat.
Advanced	295-300	0	0	75	1	17	67	20	19	53
	288-294	0	0		0	0		0	0	
	282-287	0	0		0	0		0	0	
	275-281	0	0		0	0		0	0	
	269-274	3	75		3	50		37	35	
Proficient	265-268	0	0	0	0	0	0	14	13	30
	261-264	0	0		0	0		8	7	
	258-260	0	0		0	0		6	6	
	254-257	0	0		0	0		3	3	
	250-253	0	0		0	0		1	1	
Nearing Proficiency	245-249	0	0	0	0	0	0	3	3	5
	240-244	0	0		0	0		0	0	
	235-239	0	0		0	0		0	0	
	230-234	0	0		0	0		2	2	
	225-229	0	0		0	0		0	0	
Novice	220-224	0	0	25	0	0	33	0	0	12
	215-219	0	0		0	0		2	2	
	210-214	0	0		0	0		0	0	
	205-209	0	0		0	0		0	0	
	200-204	1	25		2	33		11	10	

II. Subtest Results

Science		Possible Points	Average Points Earned		
			School	System	State
Total Points*		112	85	79	97
Standards	1. Scientific Investigations	20	15	13	17
	2. Physical Science	44	33	31	37
	3. Life Science	20	15	14	18
	4. Earth and Space Science	36	28	26	32
	5. Impact on Society	Sub scores are not reported for this standard			
	6. Historical Development	Sub scores are not reported for this standard			

--There were too few score points to report on this standard, or no items on the test measured this standard.

CRT-Alternate Performance Level Descriptors

Advanced (269-300)
The student at the Advanced level accurately and independently demonstrates the ability to carry out comprehensive content specific performance indicators.

Proficient (250-268)
The student at the Proficient level, given limited prompting, demonstrates the ability to respond accurately in performing a wide variety of content specific performance indicators.

Nearing Proficiency (225-249)
The student at the Nearing Proficiency level, given moderate prompting, demonstrates the ability to respond accurately in performing a narrow set of content specific performance indicators.

Novice (200-224)
The student at the Novice level, given physical assistance and/or modeling, is supported to participate in content specific performance indicators.

*The sum of the points for each standard may exceed the total points, as some items correlate with more than one standard.

MontCAS CRT-Alternate

Confidential

Science

School Summary Report

School: Demonstration School 2
System: Demonstration District A
Grade: 10
Spring 2010

III. Results for Subgroups of Students

Reporting Category	School					System					State				
	Number	% in N	% in NP	% in P	% in A	Number	% in N	% in NP	% in P	% in A	Number	% in N	% in NP	% in P	% in A
All Students	4	*	*	*	*	6	*	*	*	*	107	12	5	30	53
Gender															
Male	2	*	*	*	*	4	*	*	*	*	69	12	6	25	58
Female	2	*	*	*	*	2	*	*	*	*	38	13	3	39	45
Ethnicity															
American Indian or Alaska Native	0	*	*	*	*	2	*	*	*	*	11	18	0	36	45
Asian	0	*	*	*	*	0	*	*	*	*	0	*	*	*	*
Hispanic	0	*	*	*	*	0	*	*	*	*	6	*	*	*	*
Black or African American	1	*	*	*	*	1	*	*	*	*	2	*	*	*	*
Native Hawaiian or Other Pacific Islander	0	*	*	*	*	0	*	*	*	*	0	*	*	*	*
White	3	*	*	*	*	3	*	*	*	*	88	11	5	27	57
Special Education	4	*	*	*	*	6	*	*	*	*	106	12	5	29	54
Students with a 504 Plan	0	*	*	*	*	0	*	*	*	*	0	*	*	*	*
Title I (optional)	0	*	*	*	*	0	*	*	*	*	0	*	*	*	*
Migrant	0	*	*	*	*	0	*	*	*	*	0	*	*	*	*
Gifted/Talented	0	*	*	*	*	0	*	*	*	*	0	*	*	*	*
LEP/ELL	0	*	*	*	*	1	*	*	*	*	2	*	*	*	*
Former LEP Student	0	*	*	*	*	1	*	*	*	*	1	*	*	*	*
LEP Student Enrolled for First Time in a U.S. School	0	**Performance levels are not reported for 1st year LEP students**													
Free/Reduced Lunch	2	*	*	*	*	3	*	*	*	*	50	10	6	30	54

*Less than ten (10) students were assessed

MontCAS CRT-Alternate

System: Demonstration District A
Grade: 10
Spring 2010

Mathematics

System Summary Report

I. Distribution of Scores

Perf. Level	Scores	System			State		
		Number	% of Students	% of Students in Cat.	Number	% of Students	% of Students in Cat.
Advanced	293-300	0	0	67	11	10	58
	285-292	0	0		0	0	
	277-284	0	0		0	0	
	269-276	0	0		0	0	
	261-268	4	67		51	48	
Proficient	259-260	0	0	0	13	12	24
	257-258	0	0		3	3	
	254-256	0	0		2	2	
	252-253	0	0		6	6	
	250-251	0	0		2	2	
Nearing Proficiency	245-249	0	0	0	3	3	5
	240-244	0	0		2	2	
	235-239	0	0		0	0	
	230-234	0	0		0	0	
	225-229	0	0		0	0	
Novice	220-224	0	0	33	0	0	13
	215-219	0	0		2	2	
	210-214	0	0		0	0	
	205-209	0	0		2	2	
	200-204	2	33		10	9	

II. Subtest Results

Mathematics		Possible Points	Average Points Earned	
			System	State
Total Points*		100	69	84
Standards	1. Problem Solving	This standard is assessed within the frameworks of standards 2–7.		
	2. Numbers and Operations	40	26	32
	3. Algebra	16	11	13
	4. Geometry	16	11	13
	5. Measurement	0	--	--
	6. Data Analysis, Statistics, and Probability	0	--	--
	7. Patterns, Relations, and Functions	20	14	18

--There were too few score points to report on this standard, or no items on the test measured this standard.

CRT-Alternate Performance Level Descriptors

Advanced (261-300)
The student at the Advanced level accurately and independently demonstrates the ability to carry out comprehensive content specific performance indicators.

Proficient (250-260)
The student at the Proficient level, given limited prompting, demonstrates the ability to respond accurately in performing a wide variety of content specific performance indicators.

Nearing Proficiency (225-249)
The student at the Nearing Proficiency level, given moderate prompting, demonstrates the ability to respond accurately in performing a narrow set of content specific performance indicators.

Novice (200-224)
The student at the Novice level, given physical assistance and/or modeling, is supported to participate in content specific performance indicators.

*The sum of the points for each standard may exceed the total points, as some items correlate with more than one standard.

MontCAS CRT-Alternate

Confidential

Mathematics

System Summary Report

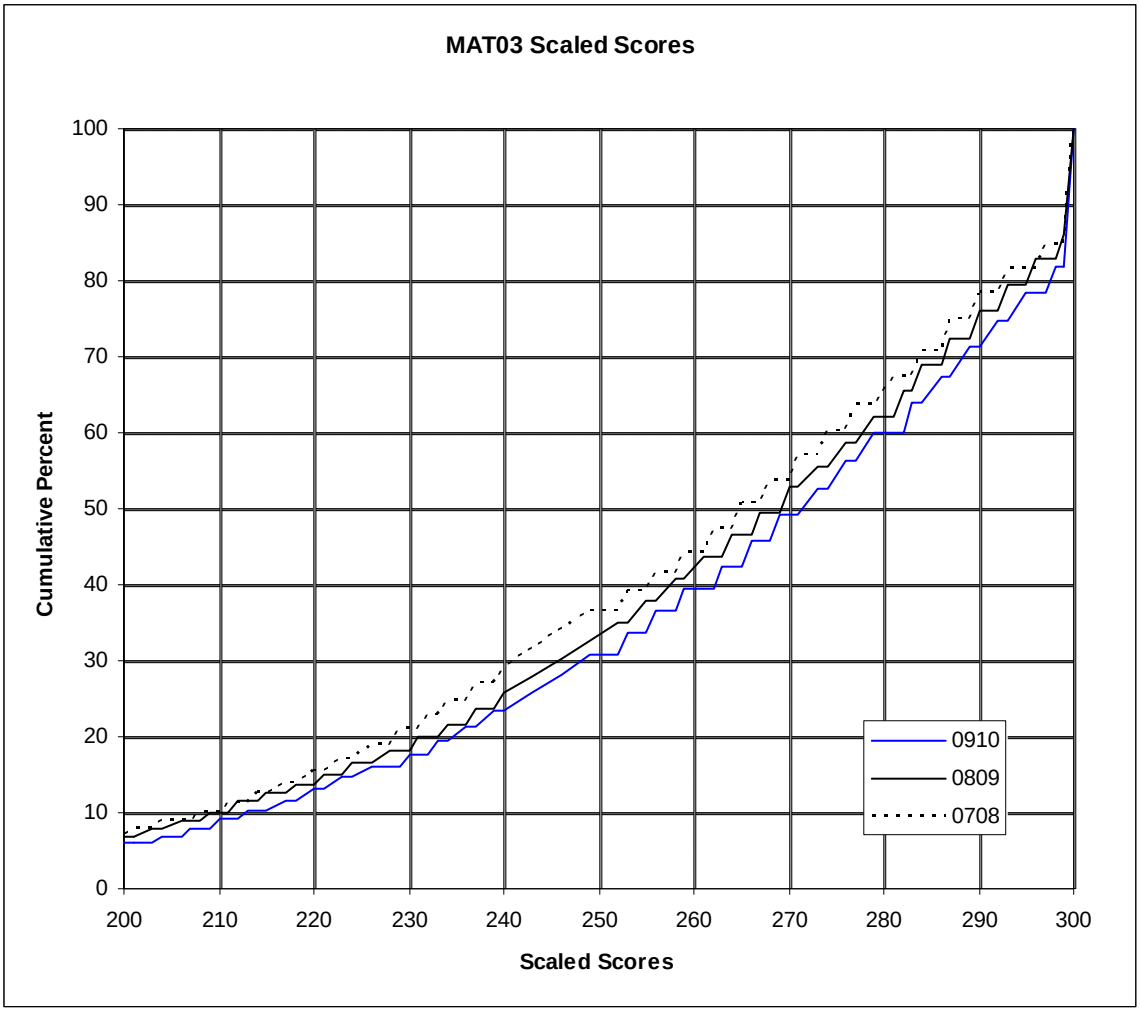
System: Demonstration District A
Grade: 10
Spring 2010

III. Results for Subgroups of Students

Reporting Category	System					State				
	Number	% in N	% in NP	% in P	% in A	Number	% in N	% in NP	% in P	% in A
All Students	6	*	*	*	*	107	13	5	24	58
Gender										
Male	4	*	*	*	*	69	13	6	17	64
Female	2	*	*	*	*	38	13	3	37	47
Ethnicity										
American Indian or Alaska Native	2	*	*	*	*	11	18	0	9	73
Asian	0	*	*	*	*	0	*	*	*	*
Hispanic	0	*	*	*	*	6	*	*	*	*
Black or African American	1	*	*	*	*	2	*	*	*	*
Native Hawaiian or Other Pacific Islander	0	*	*	*	*	0	*	*	*	*
White	3	*	*	*	*	88	13	3	27	57
Special Education	6	*	*	*	*	106	13	5	25	58
Students with a 504 Plan	0	*	*	*	*	0	*	*	*	*
Title I (optional)	3	*	*	*	*	24	25	0	21	54
Migrant	0	*	*	*	*	0	*	*	*	*
Gifted/Talented	0	*	*	*	*	0	*	*	*	*
LEP/ELL	1	*	*	*	*	2	*	*	*	*
Former LEP Student	1	*	*	*	*	1	*	*	*	*
LEP Student Enrolled for First Time in a U.S. School	0	**Performance levels are not reported for 1st year LEP students**								
Free/Reduced Lunch	3	*	*	*	*	50	12	8	22	58

*Less than ten (10) students were assessed

Appendix N—Scaled Score Cumulative Distributions


MAT03 Scaled Scores
Cumulative Percent
100
90
80
70
60
50
40
30
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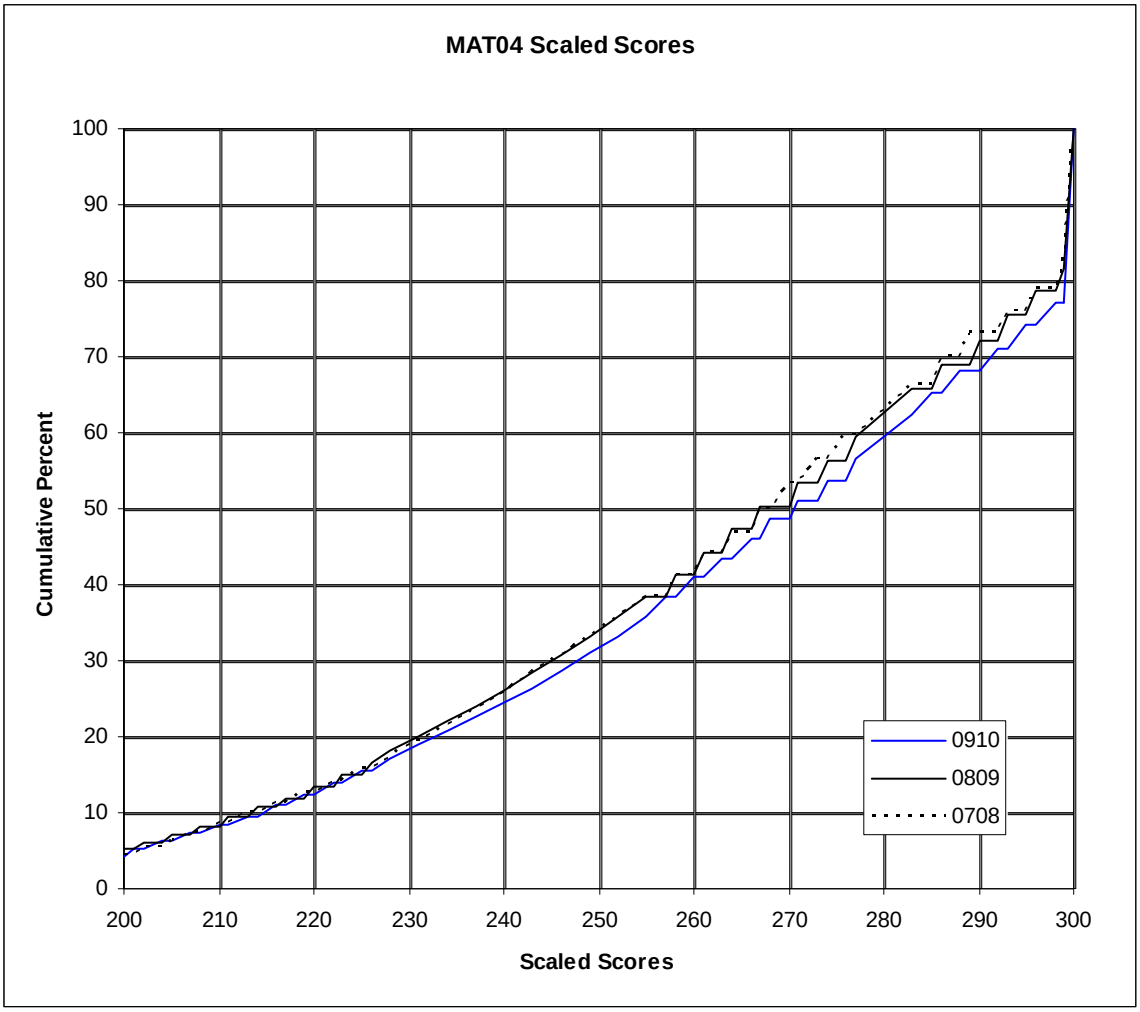
270
280
290
300
Scaled Scores
0910
0809
0708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Cumulative Percent
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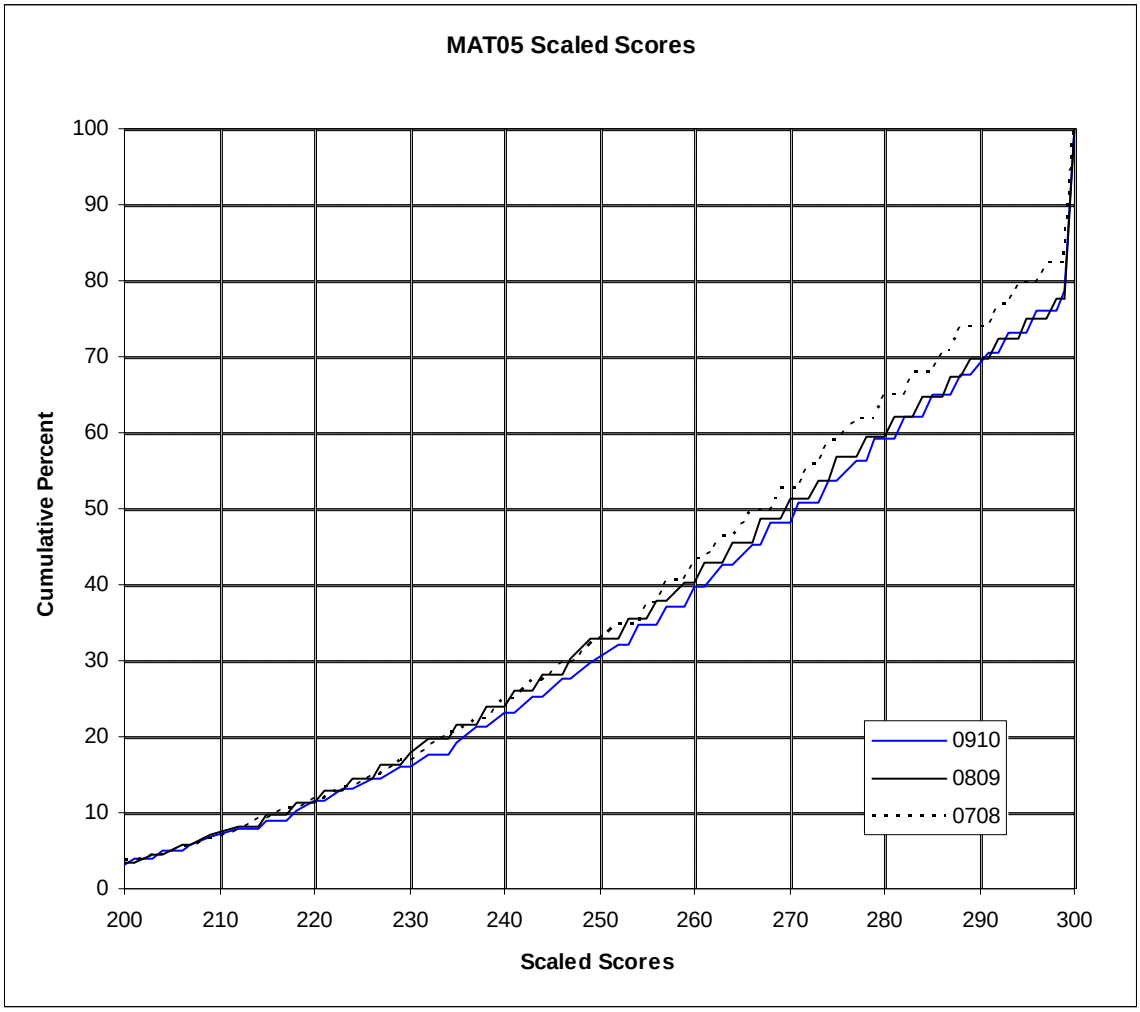
270
280
290
300
Scaled Scores
0910
0809
0708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Cumulative Percent
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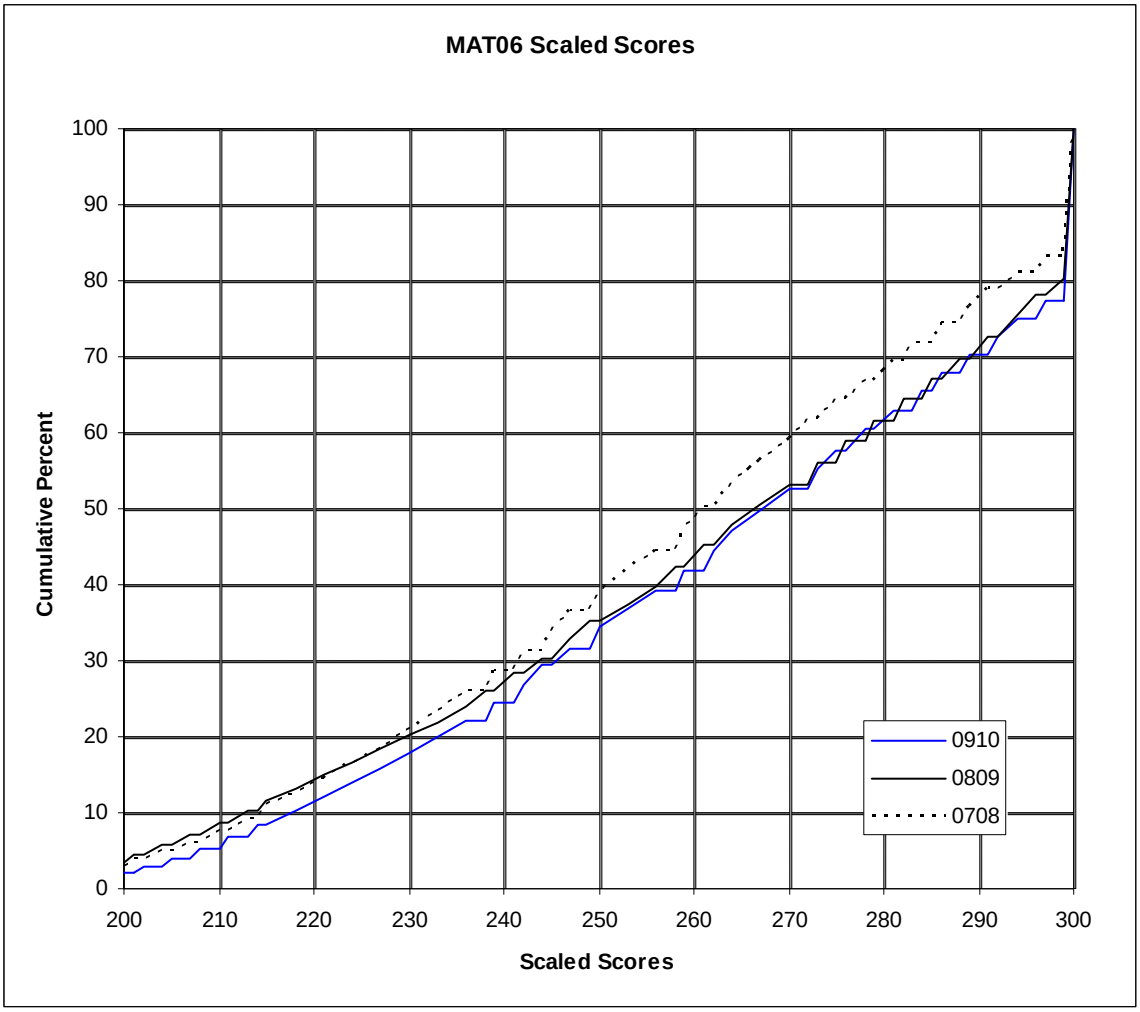
270
280
290
300
Scaled Scores
0910
0809
0708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Cumulative Percent
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50
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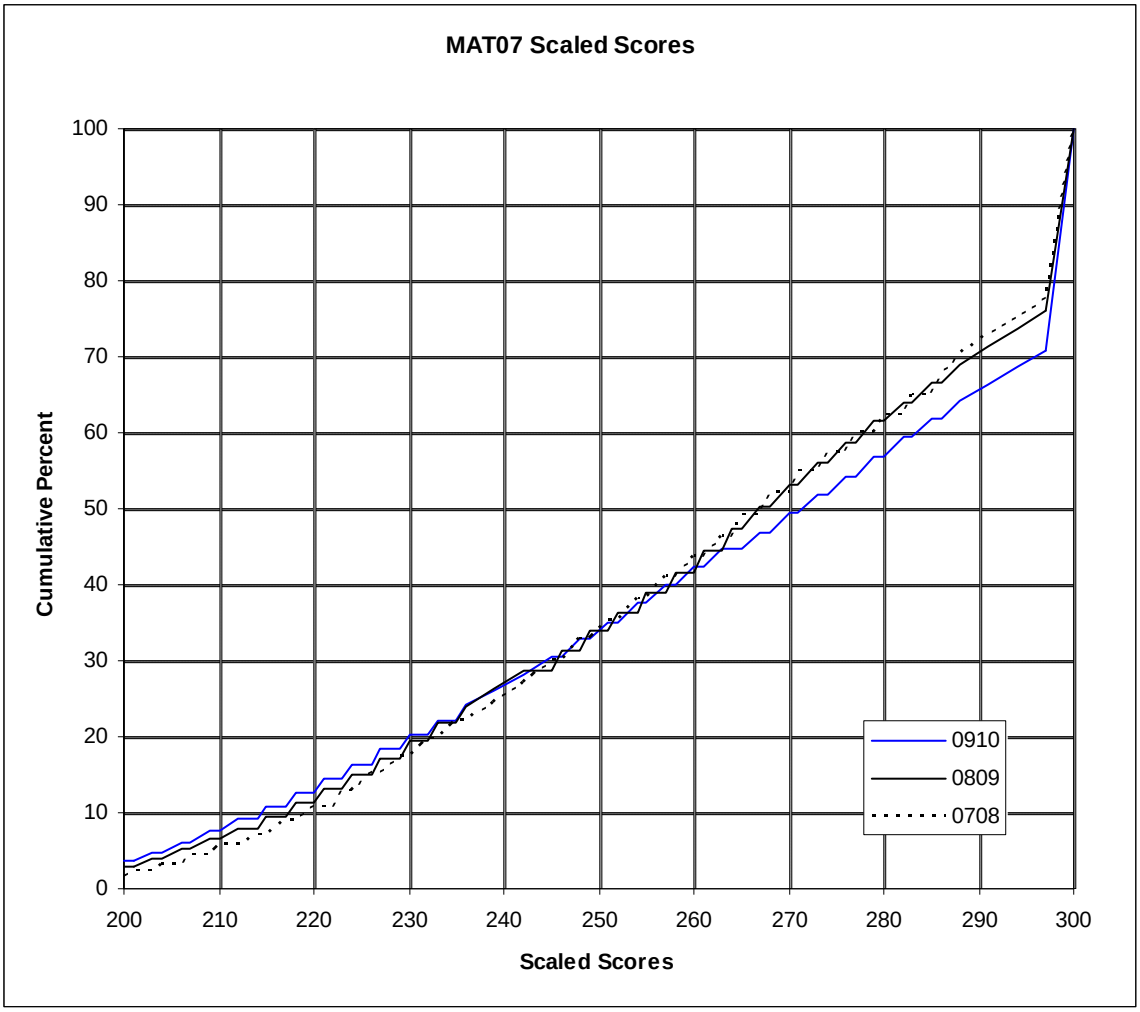
280
290
300
Scaled Scores
0910
0809
0708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Cumulative Percent
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80
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60
50
40
30
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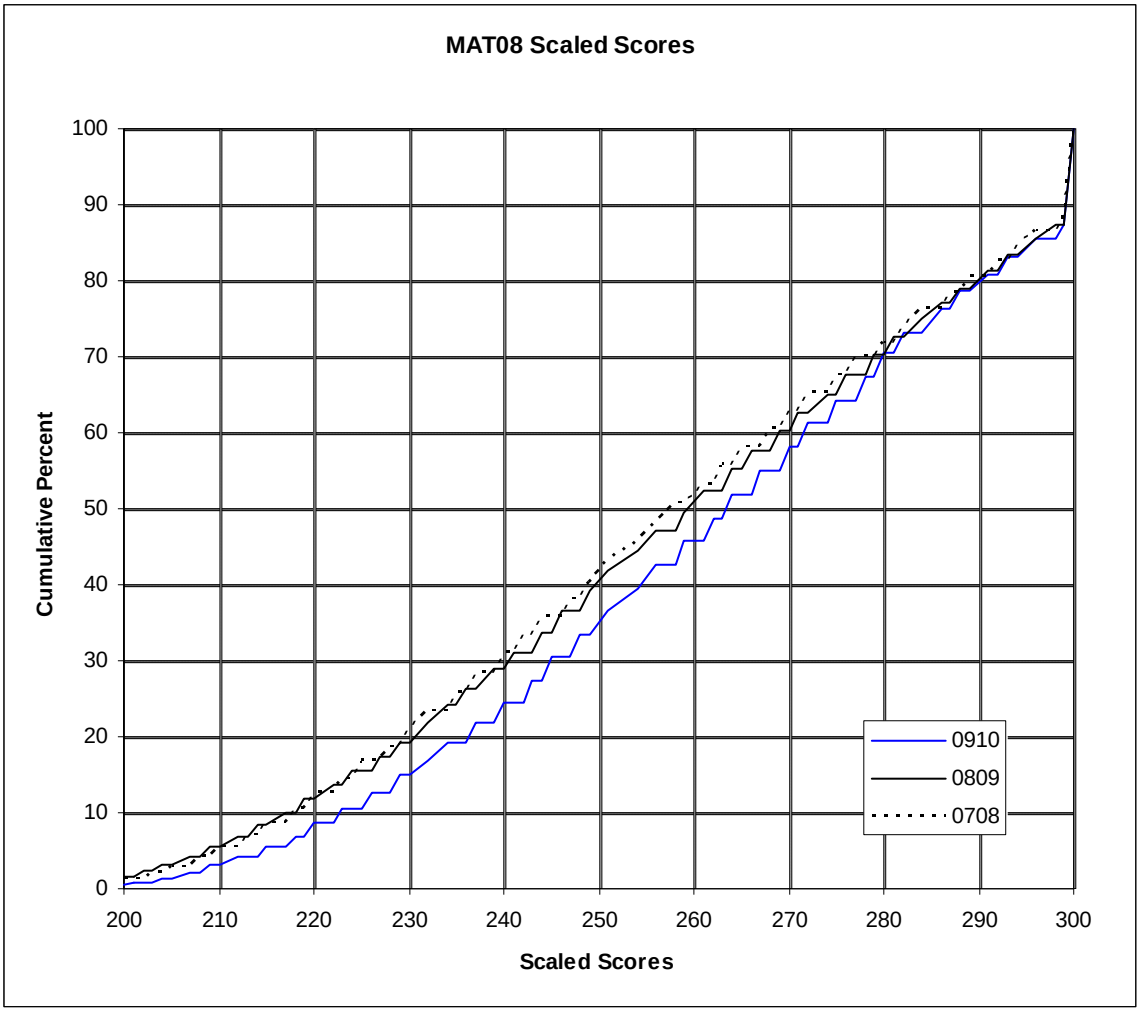
280
290
300
Scaled Scores
0910
0809
0708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Cumulative Percent
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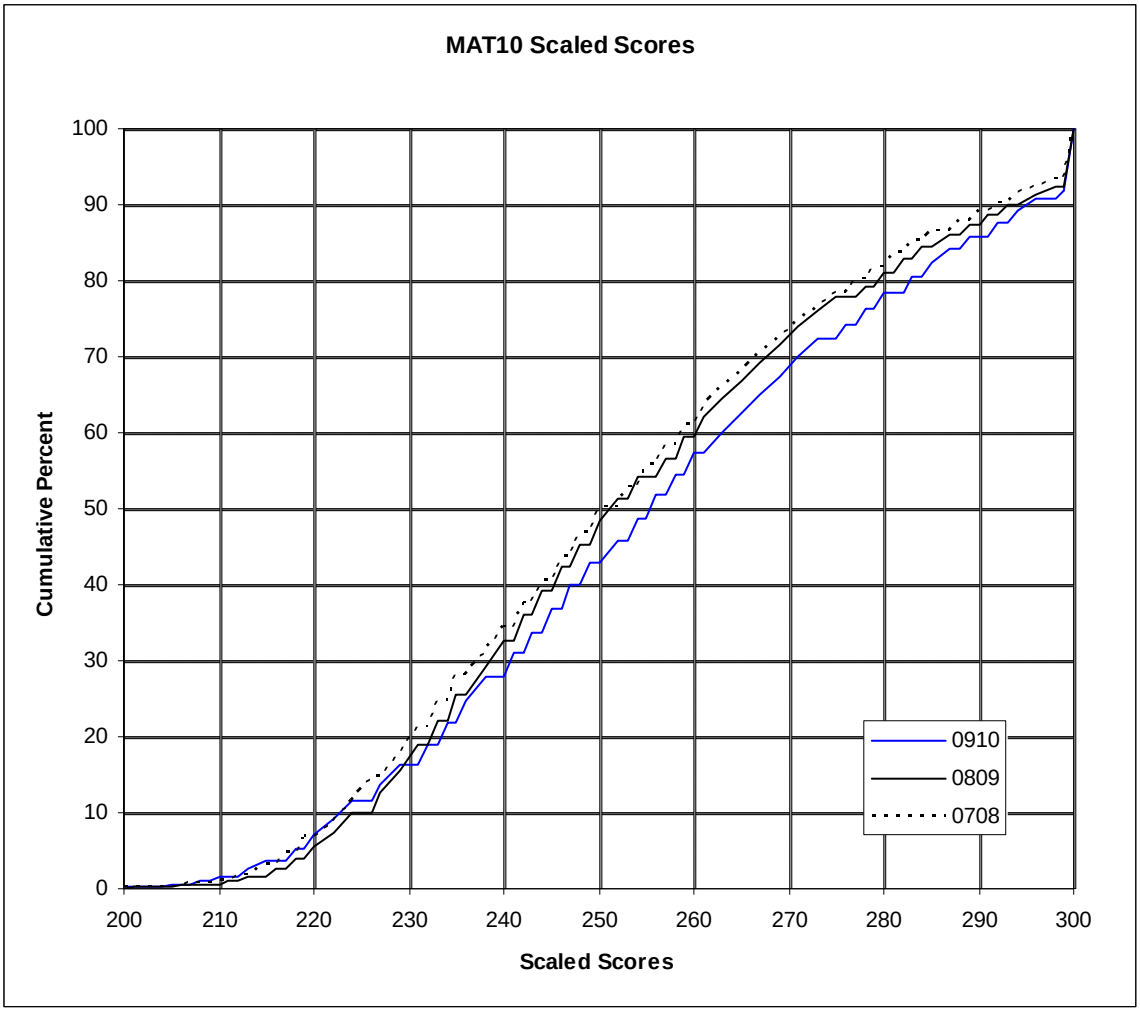
280
290
300
Scaled Scores
0910
0809
0708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Cumulative Percent
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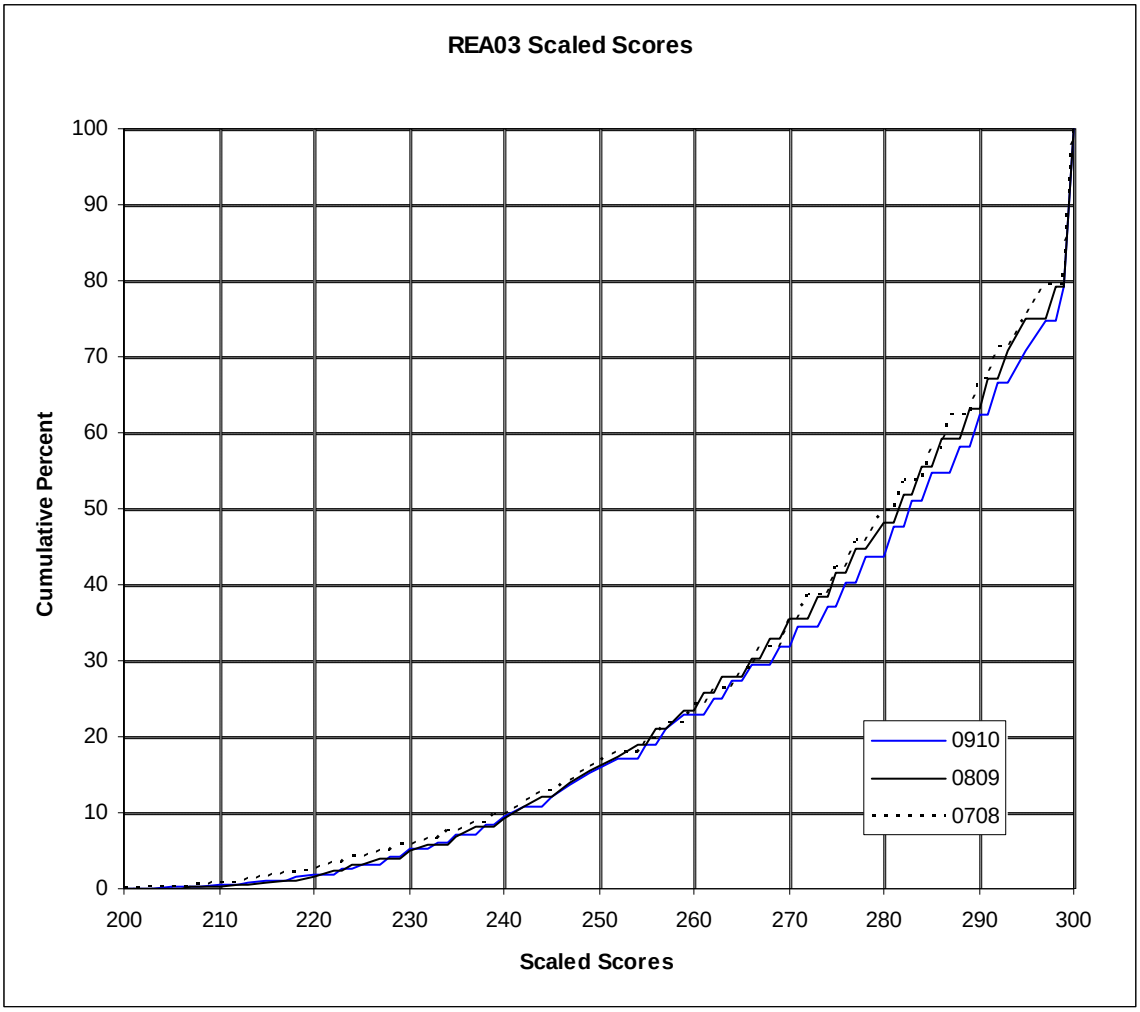
270
280
290
300
Scaled Scores
0910
0809
0708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Cumulative Percent
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50
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220
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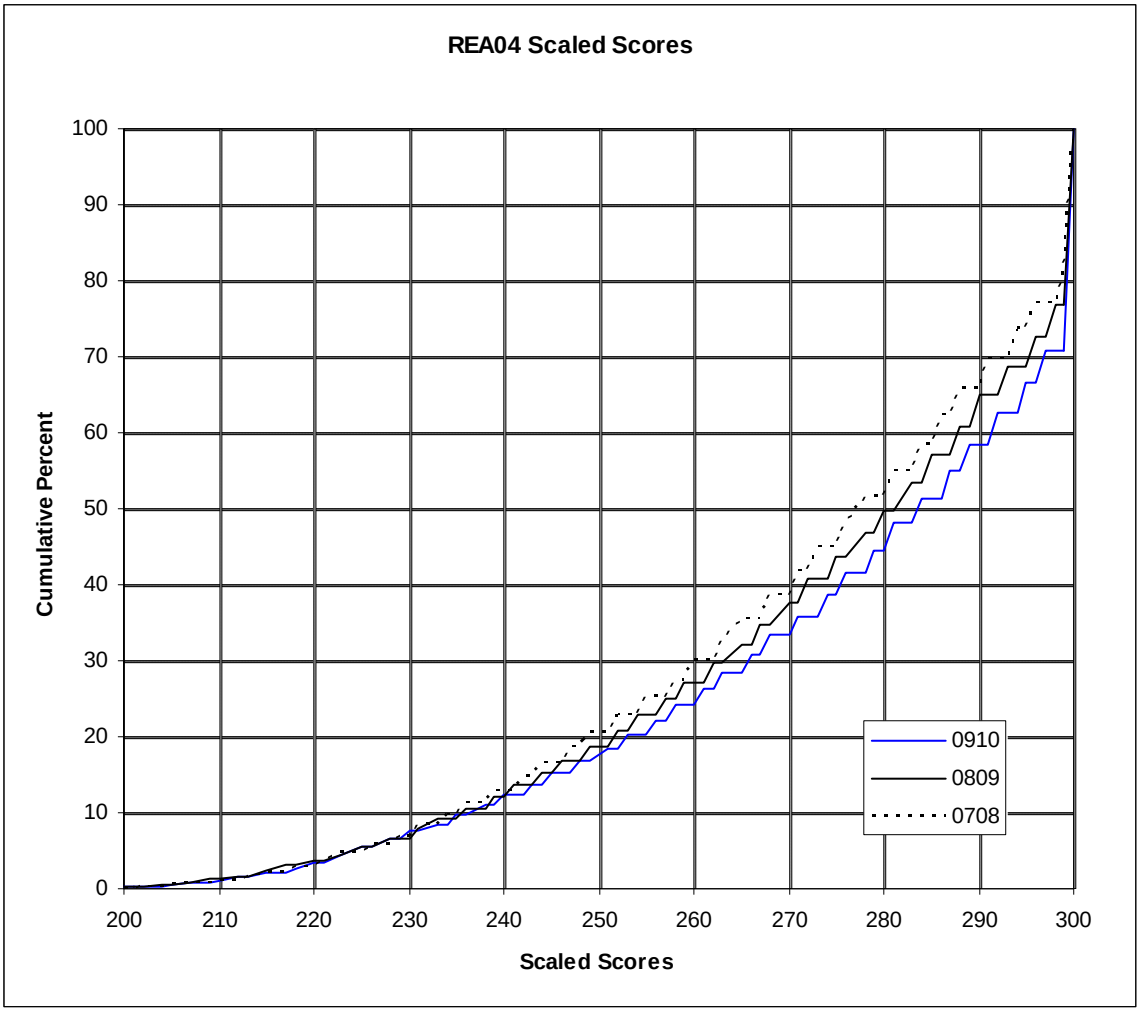
280
290
300
Scaled Scores
0910
0809
0708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Cumulative Percent
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240
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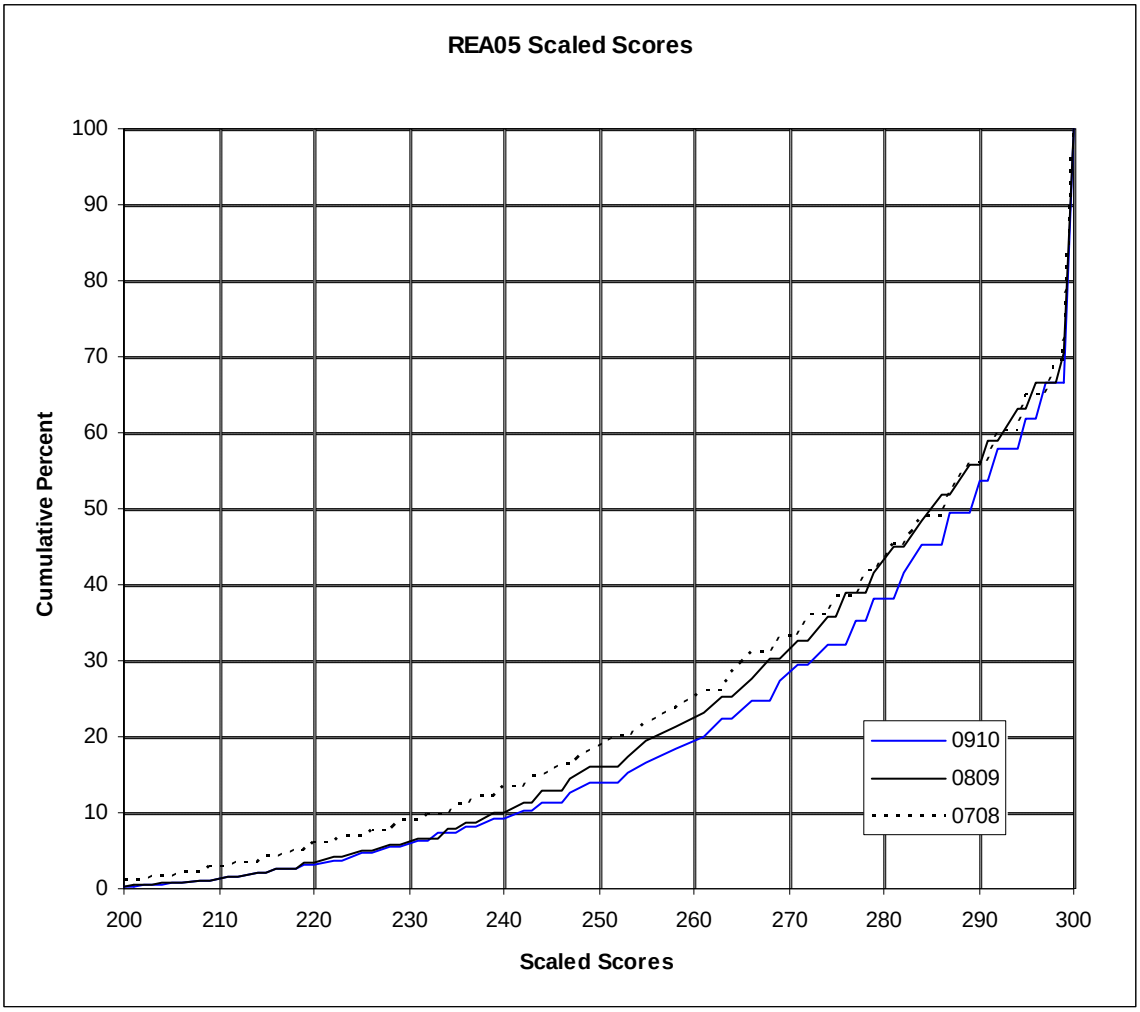
270
280
290
300
Scaled Scores
0910
0809
0708


REA05 Scaled Scores
Cumulative Percent
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60
50
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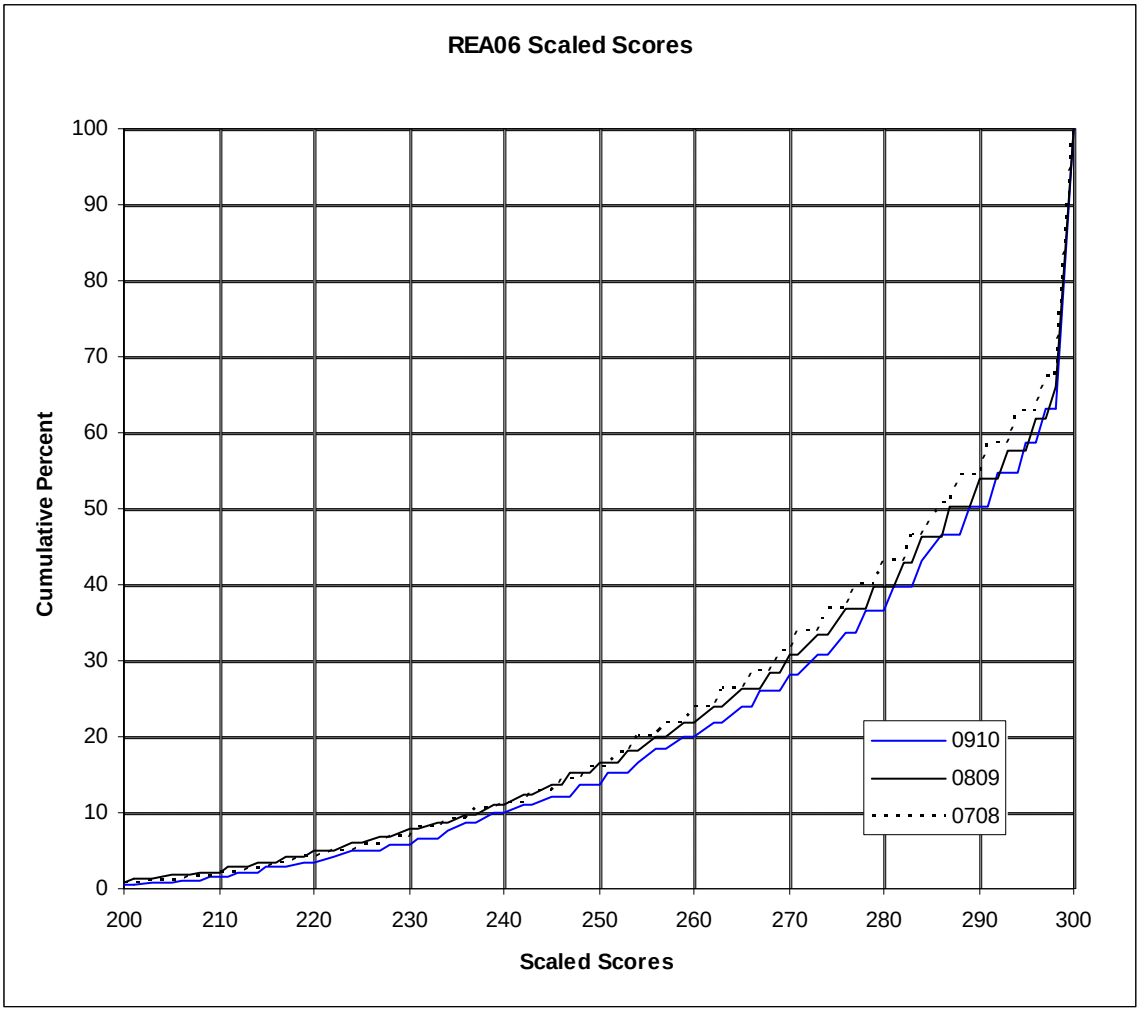
290
300
Scaled Scores
0910
0809
0708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Cumulative Percent
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80
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50
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240
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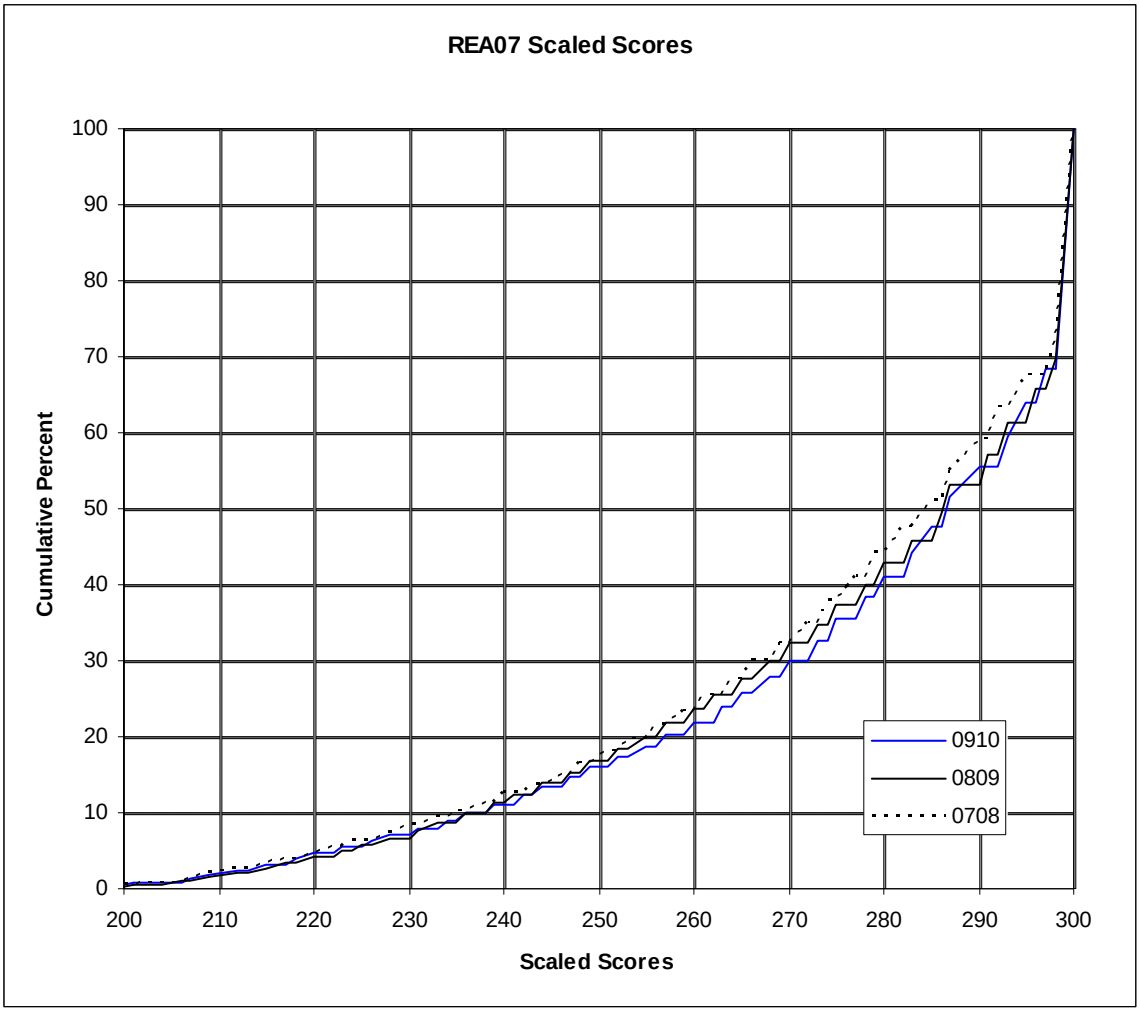
270
280
290
300
Scaled Scores
0910
0809
0708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Cumulative Percent
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80
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60
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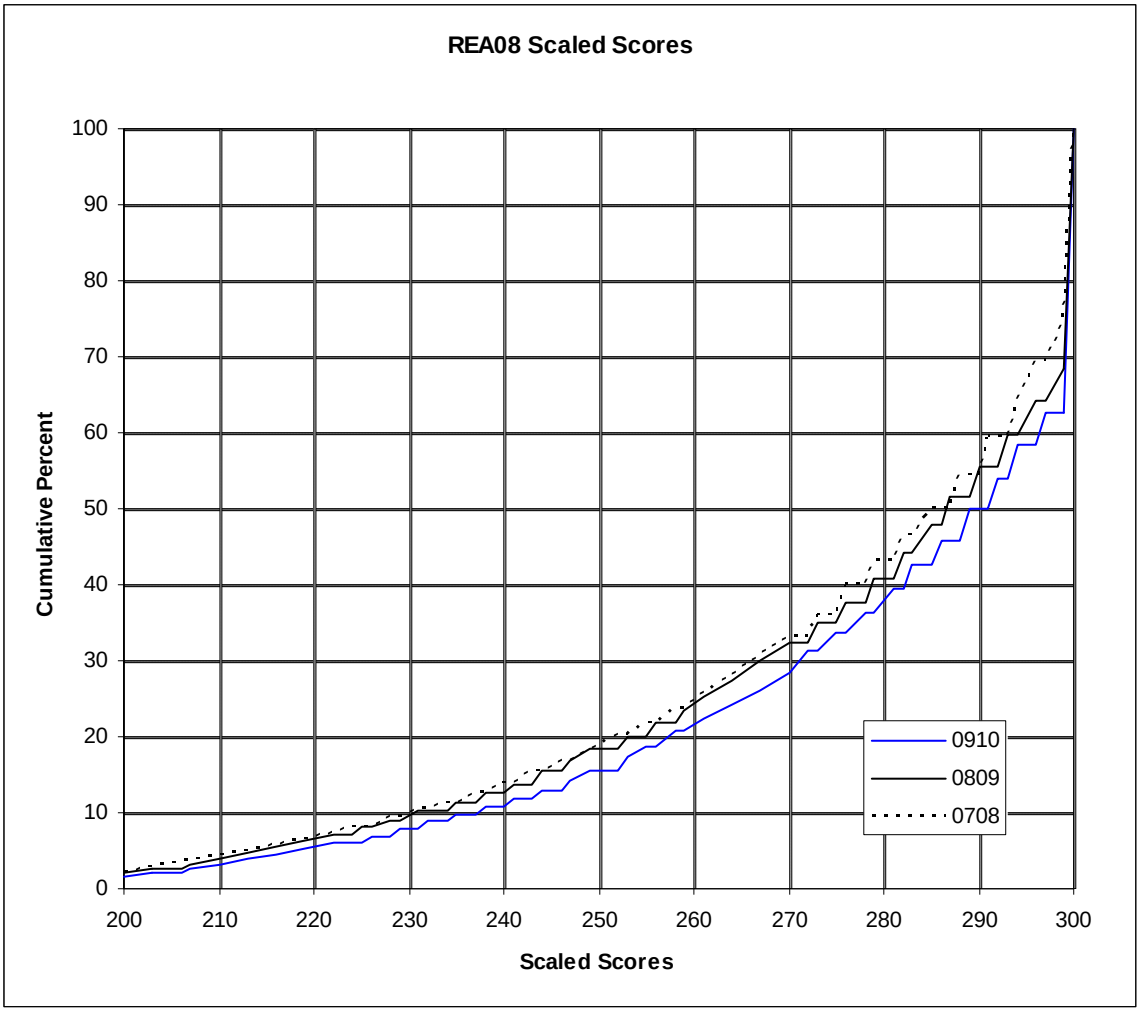
270
280
290
300
Scaled Scores
0910
0809
0708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Cumulative Percent
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50
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Scaled Scores
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0809
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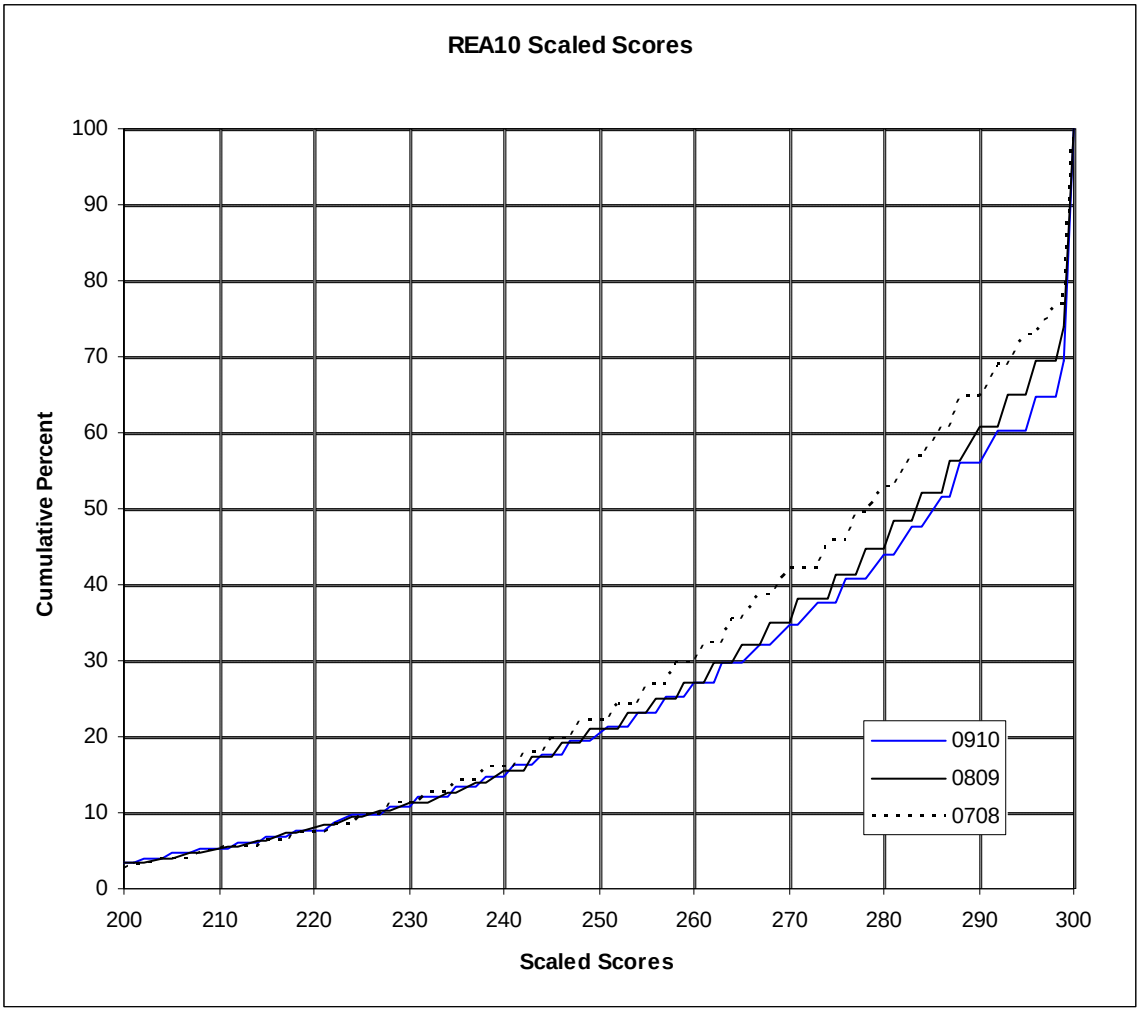
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Cumulative Percent
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220
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240
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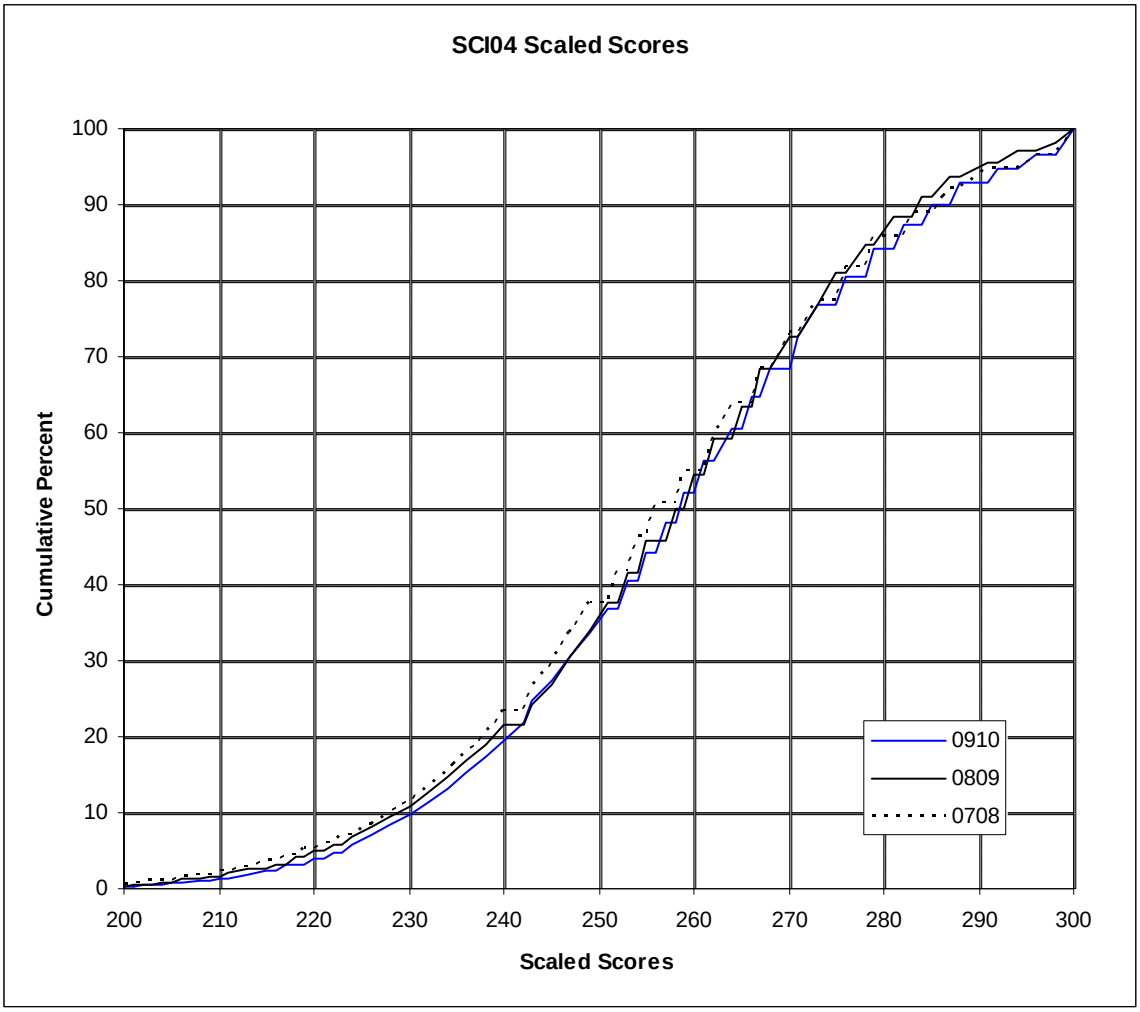
260
270
280
290
300
Scaled Scores
0910
0809
0708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Cumulative Percent
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80
70
60
50
40
30
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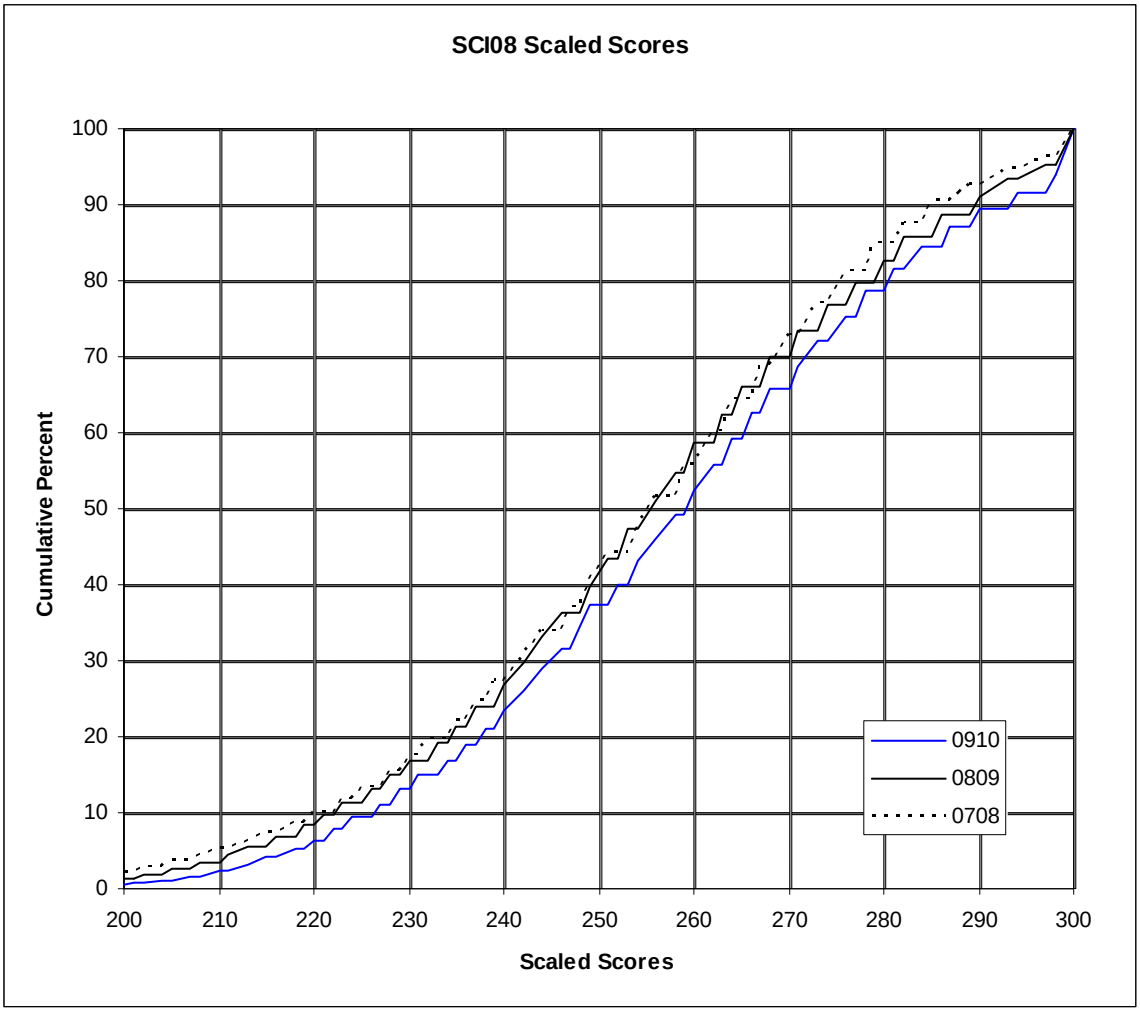
280
290
300
Scaled Scores
0910
0809
0708


SCI08 Scaled Scores
Cumulative Percent
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90
80
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60
50
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30
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250
260
270
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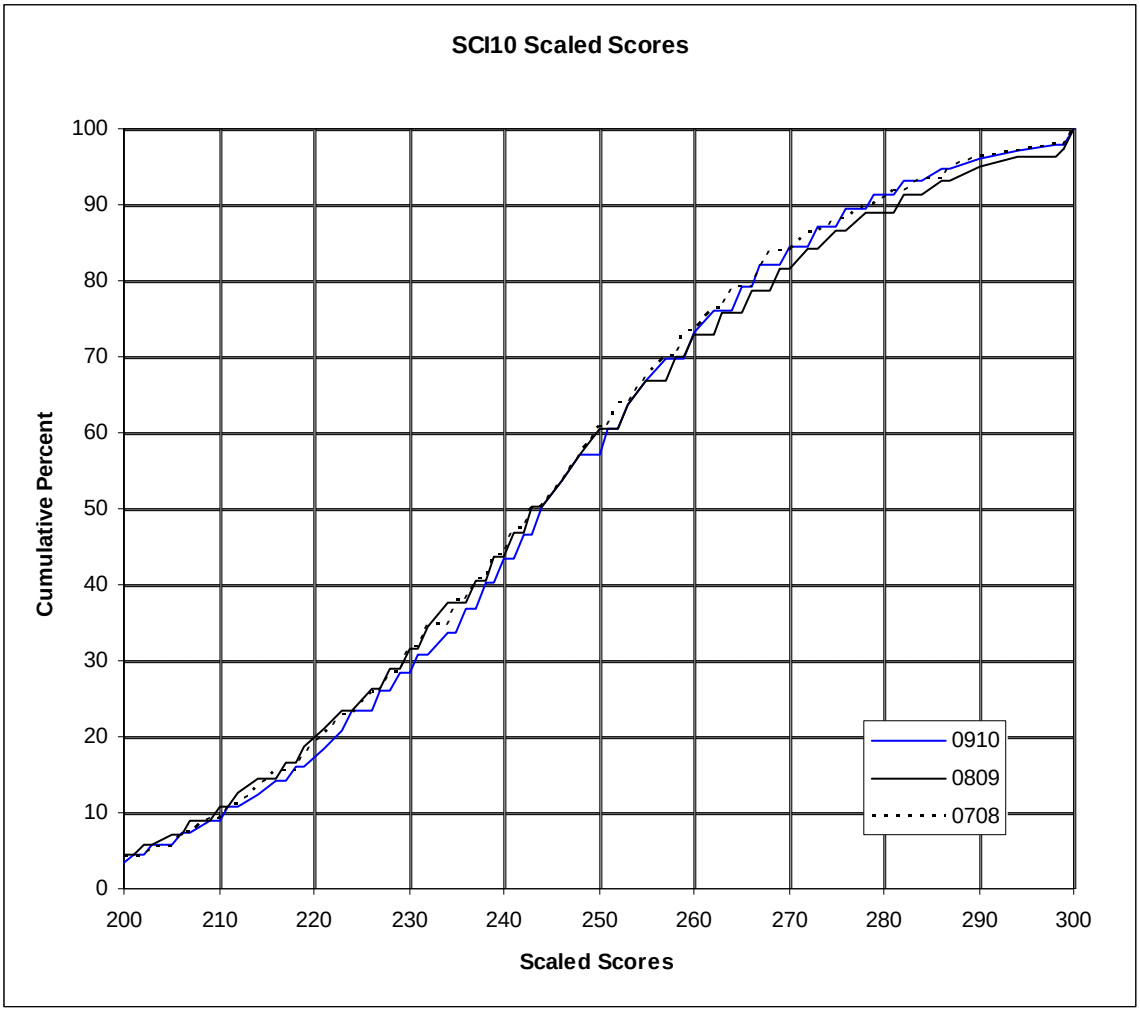
290
300
Scaled Scores
0910
0809
0708


SCI10 Scaled Scores
Cumulative Percent
100
90
80
70
60
50
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30
20
10
0
200
210
220
230
240
250
260
270
280
290
300
Scaled Scores
0910
0809
0708

Appendix O—Performance Level Distributions

Table O-1. 2009–10 Montana CRT-Alternate: Performance Level Distributions—Mathematics

Grade	*Performance Level*	*Percent in Performance Level*		
		2009–10	*2008–09*	*2007–08*
3	Novice	9.78	17.86	26.09
	Nearing Proficiency	33.7	21.43	10.87
	Proficient	50	47.62	47.83
	Advanced	6.52	13.1	15.22
4	Novice	12.63	14	24.18
	Nearing Proficiency	26.32	15	6.59
	Proficient	38.95	48	53.85
	Advanced	22.11	23	15.38
5	Novice	18.45	29.47	27.78
	Nearing Proficiency	10.68	8.42	11.11
	Proficient	47.57	36.84	39.81
	Advanced	23.3	25.26	21.3
6	Novice	17.98	11.32	17.95
	Nearing Proficiency	19.1	24.53	20.51
	Proficient	30.34	33.02	33.33
	Advanced	32.58	31.13	28.21
7	Novice	3.88	8.7	11
	Nearing Proficiency	15.53	15.94	8
	Proficient	56.31	47.83	53
	Advanced	24.27	27.54	28
8	Novice	9.76	11.22	18.99
	Nearing Proficiency	18.29	14.29	12.66
	Proficient	40.24	37.76	26.58
	Advanced	31.71	36.73	41.77
10	Novice	13.08	8.73	15.25
	Nearing Proficiency	4.67	16.67	19.49
	Proficient	24.3	22.22	25.42
	Advanced	57.94	52.38	39.83

Table O-2. 2009–10 Montana CRT-Alternate: Performance Level Distributions—Reading

Grade	*Performance Level*	*Percent in Performance Level*		
		2009–10	*2008–09*	*2007–08*
3	Novice	4.35	4.82	8.51
	Nearing Proficiency	10.87	18.07	18.09
	Proficient	65.22	49.4	45.74
	Advanced	19.57	27.71	27.66
4	Novice	11.46	6.32	16.48
	Nearing Proficiency	18.75	15.79	8.79
	Proficient	44.79	46.32	31.87
	Advanced	25	31.58	42.86
5	Novice	7.77	13.98	7.41
	Nearing Proficiency	10.68	12.9	14.81
	Proficient	34.95	26.88	36.11
	Advanced	46.6	46.24	41.67
6	Novice	12.36	4.85	6.33
	Nearing Proficiency	7.87	5.83	5.06
	Proficient	30.34	39.81	48.1

continued

Grade	Performance Level	Percent in Performance Level		
		2009–10	*2008–09*	*2007–08*
6	Advanced	49.44	49.51	40.51
7	Novice	0	4.35	7
	Nearing Proficiency	9.52	5.8	9
	Proficient	30.48	37.68	31
	Advanced	60	52.17	53
8	Novice	9.76	8.33	10.13
	Nearing Proficiency	7.32	7.29	15.19
	Proficient	30.49	26.04	18.99
	Advanced	52.44	58.33	55.7
10	Novice	12.15	8.59	9.24
	Nearing Proficiency	1.87	10.94	3.36
	Proficient	35.51	28.13	26.05
	Advanced	50.47	52.34	61.34

Table O-3. 2009–10 Montana CRT-Alternate: Performance Level Distributions—Science

Grade	Performance Level	Percent in Performance Level		
		2009–10	*2008–09*	*2007–08*
4	Novice	9.57	9.62	14
	Nearing Proficiency	11.7	10.58	10
	Proficient	30.85	21.15	24
	Advanced	47.87	58.65	51
8	Novice	8.54	2	9
	Nearing Proficiency	9.76	16	9
	Proficient	42.68	39	30
	Advanced	39.02	43	51
10	Novice	12.15	9.38	10
	Nearing Proficiency	4.67	10.94	10
	Proficient	29.91	30.47	34
	Advanced	53.27	49.22	46

Appendix P—Analysis and Reporting Decision Rules

Analysis and Reporting Decision Rules
Montana Comprehensive Assessment System (MontCAS) CRT and CRT-Alternate (Final)
Spring 09-10 Administration

This document details rules for analysis and reporting. The final student level data set used for analysis and reporting is described in the "Data Processing Specifications." This document is considered a draft until the Montana Office of Public Instruction (OPI) signs off. If there are rules that need to be added or modified after said sign-off, OPI sign off will be obtained for each rule. Details of these additions and modifications will be in the Addendum section.

I. General Information

A. Tests Administered

Grade	Subject	Items included in Raw Score		IABS Reporting Categories (Standards) (Not Applicable for CRT-Alternate)
		CRT	CRT-Alt	
03	Reading Math	Common	All	Cat2
04	Reading Math	Common	All	Cat2
	Science	Common	All	Cat3
05	Reading Math	Common	All	Cat2
06	Reading Math	Common	All	Cat2
07	Reading Math	Common	All	Cat2
08	Reading Math	Common	All	Cat2
	Science	Common	All	Cat3
10	Reading Math	Common	All	Cat2
	Science	Common	All	Cat3

B. Reports Produced
1. Student Labels (Printed)
2. Student Report (Printed and posted online)
3. Roster & Item Level Report (CRT-Alt: posted online; CRT:Interactive System)
   - by grade, subject and class/group
4. Summary Report (Online)
   Consists of sections:
   I. Distribution of Scores
   II. Subtest Results
   III. Results for Subgroups of Students

- by grade, subject and school
- by grade, subject and system
- by grade, subject (state level)

C. Files Produced (Format: comma delimited format)
   1. One state file for each grade
      a. Consists of student level results
      b. Alternately assessed students are in separate files by grade.
      c. Naming conventions
         i. CRT All subjects- Studentdatafile[2 digit grade].csv
         ii. CRT-Alternate All subjects- altStudentdatafile[2 digit grade].csv
      d. File layout: Studentdatafilelayout.xls and altstudentdatafilelayout.xls

   2. System level files (Format: Excel ; Online)
      a. Consists of student level results for each system for each grade. Contains all subjects tested at that grade.
      b. Naming convention: Studentdatafile[2 digit grade].xls
      c. File Layout: Systemstudentdatafilelayout.xls

   3. School level file (Format: Excel; Online)
      a. Consists of previous year's student level results for each school and grade. Contains all subjects tested at that grade.
      b. Naming convention: Studentdatafile[2 digit grade].xls
      c. File Layout: Systemstudentdatafilelayout.xls

D. School Type

Schtype	**Source**	**Description**	**Included in Aggregations**		
			School	**System**	**State**
"Pras"	Data file provided by state	Private Accredited School. They are their own system	Yes. Same information for school & system but both sets of reports produced	Yes. Same information for school & system but both sets of reports produced	No
"Prnas"	Data file provided by state	Private non-accredited school. They are their own system	Yes. Same information for school & system but both sets of reports produced	Yes. Same information for school & system but both sets of reports produced	No
"SNE"	Scanned data/updated by OPI	Student not enrolled	No.	No.	No.

			Included in Aggregations	
"Oth"	non-private school	Yes	Yes	Yes

E. Other Information
   1. CRT Tests are constructed with a combination of common and embedded field test items.
   2. The CRT-Alternate consists of a set of 5 performance tasklets. The number of items in each tasklet varies.
   3. Braille Students:
      a. See Appendix A.1 for a list of the items not included in the Braille form.
      b. If a student is identified as taking the Braille test, these items are not included in the student's raw score. The student is scaled on a separate form based on the items that are available to him or her. See the Calculations section for more information.

II. Student Participation/Exclusions

A. Test Attempt Rules
   1. A valid response to a multiple choice item is A, B, C, or D. An asterisk (multiple marks) is not considered a valid response. A valid score for an open response item is a non-blank score.
   2. Incomplete (CRT): The student has fewer than two (2) but at least one (1) valid response to common items.
   3. Incomplete (CRT-Alternate): The student has fewer than three (3) scores across all tasklets.
   4. The student is classified as Did Not Participate (DNP) in CRT if the student does not have any valid responses for that subject in either CRT or CRT-Alternate and no not tested reason.

B. Not Tested Reasons
   1. If a student is marked First year LEP regardless of items attempted the student is considered first year LEP for reporting purposes. Reading is optional for first year in U.S schools LEP students.

C. Student Participation Status
   1. The following students are excluded from all aggregations.
      a. Foreign Exchange Students (FXS).
      b. Homeschooled students (schtype='SNE').
      c. Student in school less than 180 hours (PSNE).
      d. DNP (for that subject)
      e. First year in U.S schools LEP*(regardless of how many items were attempted)
      f. CRT only: Student tested with Non-Standard Accommodations (NSA for that subject)*
      g. Alt (Alt='1')

      * These students are aggregated on the Disaggregated report in their respective rows.
   2. If any of the non-standard accommodations are bubbled the student is considered tested with non-standard accommodations (NSA) in that subject.

3. If the student has not been in that school for the entire academic year the student is excluded from school level aggregations (NSAY).
4. If the student has not been in that system for the entire academic year the student is excluded from system and school level aggregations (NDAY).
5. If the student took the alternate assessment the student is not counted as participating in the general assessment. Alternate Assessment students receive their results on an Alternate Assessment Student Report. They are reported according to participation rules stated in this document.
6. (CRT-Alternate) If the teacher halted the administration of the assessment after the student scored zero (0) for three (3) consecutive items within tasklets , the student is classified as Halted in that subject. If the student was halted within a tasklet then the rest of the items within the tasklet are blanked out and do not count toward the student's score. If the other tasklets are complete then those items will be counted toward the student's score.
7. If the student took the Braille form of the test the raw scores are not included in raw score school, system or state averages. They are not included in group averages on the interactive roster.

D. Student Participation Summary

Participation Status	**Part. Flag**	**Raw score**	**Scaled Score**	**Perf. level**	**Included on Roster**	**Included in aggregations**		
						Sch	**Sys**	**Sta**
FXS	E	✓	✓	✓				
SNE	E	✓	✓	✓				
PSNE	E	✓	✓	✓				
NSA(by subject) Applies to CRT only	A	✓	✓	✓	✓	Only included in count and percents on Disaggregated report for nonstandard accommodations.		
First year in U.S schools LEP	A	✓	See Report Specific Rules	See Report Specific Rules	✓			
NSAY only	B	✓	✓	✓	✓		✓	✓
NDAY	C	✓	✓	✓	✓			✓
ALT*	A	✓	✓	✓	✓	See footnote below		
Incomplete	A	✓	✓	✓	✓			
DNP (Non-Participants)	F	✓	✓	✓	✓			
Halted(CRT-Alt only by subject)	D	✓	✓	✓	✓	✓	✓	✓

Participation Status	Part. Flag	Raw score	Scaled Score	Perf. level	Included on Roster	Included in aggregations		
						Sch	Sys	Sta
Tested	Z	✓	✓	✓	✓	✓	✓	✓

* They are included in summary data only for alternate assessment reports (according to participation rules).

If a student has conflicting participation statuses the following hierarchy is applied to determine how the student is reported:

F (Student attempted no items and is not alt and cannot be classified as first-year LEP)
E (FXS, SNE or PSNE)
A (NSA, first year in U.S schools LEP, ALT or INC)
C (NDAY)
B (NSAY)
D (Halted; applies to CRT-Alt only)
Z (completed CRT or CRT-Alt and none of the above conditions apply)

III. Calculations

A. Raw Scores
   1. (CRT) Raw scores are calculated using the scores on common multiple choice and open response items.
   2. (CRT-Alternate) Raw score is the sum of the individual item scores.

B. Scaling
   1. Scaling is accomplished by defining the unique set of test forms for each grade/subject combination. This is accomplished as follows:
      a. Translate each form and position into the unique item number assigned to the form/position.
      b. Order the items by
         I. Type- multiple choice, short-answer, constructed-response
         II. Form-common, then by ascending form number.
         III. Position
      c. If an item number is on a form, then set the value for that item number to '1', otherwise set to '.'. Set the exception field to '0' to indicate this is an original test form.
      d. If an item number contains an 'X' (item is not included in scaling) then set the item number to '.'. Set the exception field to '1' to indicate this is not an original test form.
      e. Compress all of the item numbers together into one field in the order defined in step II to create the test for the student.
      f. Select the distinct set of tests from the student data and order by the exception field and the descending test field.
      g. Check to see if the test has already been assigned a scale form by looking in the daScaleForm table. If the test exists then assign the existing scale form. Otherwise assign the next available scale form number. All scale form numbering starts at 01 and increments by 1 up to 99.

   2. Psychometrics provides a lookup table for each scale form. These lookup tables are used to assign scaled scores, performance levels and standard errors.

3. The scaled score cuts for all three subjects and all grades have been fixed and are the same as last year for the CRT.
4. Students excluded from aggregations at the state level are excluded from psychometric files.

C. CRT-Alternate: The classcode is created using the following steps:
   1. The following students are not included when creating the class codes.
      - SNE
      - FXS
      - PSNE
   2. The dataset (by grade) is sorted by schcode and class/group name
   3. The records are then numbered consecutively starting at 1. This number is then padded with zeros (in front) to create a 3 digit number.

D. Performance Level coding:

Numeric Performance Level	**Performance level Name**	**Abbreviation**
1(lowest)	Novice	N
2	Nearing Proficient	NP
3	Proficient	P
4(highest)	Advanced	A

E. Rounding Table

Calculation	**Rounded (to the nearest)**
Static Reports: Percents and averages	Whole number
Item averages : Multiple choice items	The average is multiplied by 100 and rounded to the nearest whole number.
Item averages: Open response items	Open-response item averages are rounded to the nearest tenth.

F. Minimum N size
1. The number of included students (N) in a subject is the number of students in the school/system/state minus FXS minus PRAS minus PRNAS minus PSNE minus SNE minus First year LEP minus Incomplete minus NSA minus DNP.
2. Minimum N size is 10.
3. School/system reports are produced regardless of N-size.

G. The common items are used in reporting the average number of points for each standard.

H. Assignment of rperflevel
   1. If the student is marked as taking the CRT-Alt then rperflevel='A' otherwise
   2. If the student is classified as did not participate (DNP) then rperflevel='D' otherwise
   3. If the student is Incomplete in a subject and not marked first year LEP rperflevel='I' otherwise
   4. If the student is incomplete in Reading or has not attempted any items in Reading and is marked first year LEP rperflevel='L' for all subjects otherwise
   5. If the student does not meet any of the above conditions then rperflevel=perflevel.

IV. Report Specific Rules

A. Student Label
   1. If a student is First year LEP and incomplete in Reading, the Reading performance level is 'LEP'. The reading scaled score is blank.
   2. If a student is First year LEP, the math and science performance levels are the name of the earned performance level and the scaled scores are the student's earned score.
   3. If the student is not first year LEP, the performance level name corresponding to the student's earned score is displayed.
   4. If the student is First year LEP but is not incomplete in Reading then the student receives his earned scaled score and performance level.
   5. If the student is DNP the student receives a student label. The student receives scaled score =200 and performance level=Novice.
   6. The student's name is formatted as Lname, Fname.
   7. The student's name is uppercase.
   8. The school and system names are title case.
   9. The labels are sorted alphabetically by Lname, Fname within school and grade.
   10. Test date is 2010.
   11. Performance level name from section III.D above is shown on the label if the student receives a performance level.

B. Roster & Item Level Report-Alternate Assessment only
   1. If a student is First year LEP and the student is not incomplete in Reading:
      a. The math (and science) performance level is the abbreviation of the earned performance level and the scaled score is the student's earned score.
      b. The reading performance level is the abbreviation of the earned performance level and the scaled score is the student's earned score.
      c. The student is excluded from Reading, Math and Science aggregations.
   2. If the student is First year LEP and incomplete in Reading
      a. The student's Reading, Math (and Science) performance levels are 'LEP'.
      b. The student's math (and science) scaled score is the student's earned scaled score and the reading scaled score is blank.
      c. The student's responses for all subjects are displayed.
      d. The student is excluded from Math, Reading (and Science) aggregations.
   3. If the student is not first year LEP, the performance level abbreviation corresponding to the student's earned score is displayed.
   4. If the student is incomplete the student receives the scores with a footnote (†) "Student did not complete the assessment."

5. There is no last name or first name for the student, the name displayed is “Name Not Provided”. These students appear at the bottom of the roster.
6. If class/group information is missing the roster is done at the school level.
7. Results for Alternate Assessment students are reported only on their class/group/school’s alternate *Roster & Item Level Report.*
8. Within each demonstration school the class is ‘DEM’.
9. Only the standards reported on the Summary report are reported on the roster.
10. The student’s are sorted by lname, fname
11. Student names are formatted Lname, Fname.
12. Student names are uppercase.
13. Performance level abbreviation from section III.D is placed the performance level column if the student receives are performance level.
14. If NSAY=’1’ or NDAY=’1’ then place appropriate symbol beside the first name. See addenda section for symbols
15. If [subject]halted=’1’ for any subject then place appropriate symbol beside the first name. See addenda section for symbols.

C. Interactive Roster – CRT only
   1. Students who are DNP in a subject are reported with scaled score=200 and performance level=’DNP’.
   2. Students who are Incomplete in a subject are reported with their earned scaled score and performance level=’INC’ on the interactive roster.
   3. Students who are first-year LEP and who complete the reading test are reported with their earned scaled score and performance level and are included in school, system and state level aggregations for all subjects unless otherwise excluded based on completeness in math or science.
   4. Students who are first-year LEP and who do not complete the reading test are reported with their earned scaled score and performance level=’LEP’ for all subjects. These students are excluded from school, system and state level aggregations.
   5. Students who participated in Alternate assessment are listed on the rosters. Their scaled score is blank and the performance level=’ALT’. These students are not included in aggregations.
   6. The items are reported using the released item number.
   7. Students who took the Braille form are not included in any rawscore aggregations. These students have a scaleform other than 01.
   8. The following students will have included set to 0 in tblscoreditem (these students are excluded from performance level aggregations):
      a. The student did not participate in the subject (partstatus=’F’)
      b. The student has partstatus=’E’
      c. The student is LEPfirst (LEPfirst=’1’ regardless of how many items attempted)
      d. The student is incomplete in the subject.
      e. The student took the alternate assessment (alt=’1’)
      f. Student took the subject with nonstandard accommodations (NSA).
      g. Student is NSAY (NSAY=’1’).
      h. Student is NDAY (NDAY=’1’).
   9. If the student took the Braille form (Braille=’1’), included is set to 2. These students are excluded from raw score aggregations.

10. If students do not fall into any of the categories in numbers 8 and 9 above, included is set to '1'.
11. If partstatus='E' for any subject then interactive='0' otherwise interactive='1'. Students with interactive='0' are not available in the interactive site.
12. State level item averages do not include students with school type PRAS, PRNAS or SNE.
13. District level item averages do not include students who are marked nday='1'.
14. Only students whose partstatus is not 'E" for any subject are included in tblStuLongitudinal.
15. The filter column in tblItemAveragesLookup is the concatenation of the gender,ethnic,iep,lep,econdis,migrant and plan504 fields in that order. The leading zero in the ethnic field is removed prior to concatenating.
16. RepType='0' for all records in tblItemAverages.

D. Summary Report

1. Section III (Results for Subgroups of Students)
    a. Performance level results for subgroups with N less than 10 are suppressed. N is always reported. Footnote * 'Less than 10 students were assessed.'
    b. CRT only: Count of students who are considered NSA for that subject excluding those students who are incomplete, nsay (at school level), nday (at school and system level) or FXS or SNE or PSNE or First year LEP or alt (general assessment report).
    c. Count of First year LEP students excludes those students who are nsay (at school level), nday (at school or system level) or incomplete or FXS or SNE or PSNE or NSA or alt (general assessment).
2. Section II (Subtest Results) Students with scaleform other than 01 are not included in Subtest Results.

V. Data File Rules

1. The following students are not included in the state file:
    a. Alternate Assessment students (in CRT)
    b. Homeschooled students (SNE)
    c. Student is in school less than 180 hours (PSNE)
2. If the student receives a performance level 'LEP' on the student report in Reading, the student receives LEP for the Reading performance level in the state files.
3. Alt students who are halted are marked '1' in the halted field for that subject.
4. Students who take the Braille form of the test are flagged Braille='1' in the state and system level files.
5. In the system level files only the released scored items are included.
6. The following students are not included in the system level files:
    a. Foreign Exchange students (FXS='1')
    b. Homeschooled students (SNE)
    c. Student is in school less than 180 hours (PSNE)
7. The following students are not included in the previous year school level files:
    a. Foreign Exchange students (FXS='1')
    b. Homeschooled students (SNE)
    c. Student is in school less than 180 hours (PSNE)

VI. Shipping Product Code Summary

1. School (ReportFor='1')

Grade	Report Name	ReportType	Subject	ContentCode	Quantity
03	Student Labels (CRT)	03	Reading and Math	00	1 set for each school
04	Student Labels (CRT)	03	Reading, Math and Science	00	1 set for each school
05	Student Labels (CRT)	03	Reading and Math	00	1 set for each school
06	Student Labels (CRT)	03	Reading and Math	00	1 set for each school
07	Student Labels (CRT)	03	Reading and Math	00	1 set for each school
08	Student Labels (CRT)	03	Reading Math and Science	00	1 set for each school
10	Student Labels (CRT)	03	Reading Math and Science	00	1 set for each school
03	Student Report (CRT)	02	Reading and Math	00	1 for each student
04	Student Report (CRT)	02	Reading Math and Science	00	1 for each student
05	Student Report (CRT)	02	Reading Math	00	1 for each student
06	Student Report (CRT)	02	Reading and Math	00	1 for each student

Grade	Report Name	ReportType	Subject	ContentCode	Quantity
07	Student Report (CRT)	02	Reading and Math	00	1 for each student
08	Student Report (CRT)	02	Reading Math and Science	00	1 for each student
10	Student Report (CRT)	02	Reading Math and Science	00	1 for each student
03	Student Labels (CRT-Alt)	07	Reading and Math	00	1 set for each school
04	Student Labels (CRT-Alt)	07	Reading, Math and Science	00	1 set for each school
05	Student Labels (CRT-Alt)	07	Reading and Math	00	1 set for each school
06	Student Labels (CRT-Alt)	07	Reading and Math	00	1 set for each school
07	Student Labels (CRT-Alt)	07	Reading and Math	00	1 set for each school
08	Student Labels (CRT-Alt)	07	Reading Math and Science	00	1 set for each school
10	Student Labels (CRT-Alt)	07	Reading Math and Science	00	1 set for each school

Grade	Report Name	ReportType	Subject	ContentCode	Quantity
03	Student Report (CRT-Alt)	08	Reading and Math	00	1 for each student
04	Student Report (CRT-Alt)	08	Reading Math and Science	00	1 for each student
05	Student Report (CRT-Alt)	08	Reading Math	00	1 for each student
06	Student Report (CRT-Alt)	08	Reading and Math	00	1 for each student
07	Student Report (CRT-Alt)	08	Reading and Math	00	1 for each student
08	Student Report (CRT-Alt)	08	Reading Math and Science	00	1 for each student
10	Student Report (CRT-Alt)	08	Reading Math and Science	00	1 for each student
00	Interp. Guide	04		00	1 per school

Addenda:

A. PDF file naming conventions to be used by Report Programmer
   1. Printed Reports
      a. Labels
         MT La [grade].pdf
      b. Student Report (Parent Copy)
         #####[systemcode]MT Sr [grade] (Parent Copy).pdf
      c. Student Report (School Copy)
         #####[systemcode]MT Sr [grade] (School Copy).pdf
   2. Web Reports
      a. School Summary Reports
         MT Su Sch [3 character subject][grade].pdf
      b. System Summary Reports
         MT Su Dis [3 character subject][grade].pdf
      c. State Summary Reports
         MT Su Sta [3 character subject][grade].pdf

B. Footnotes to be placed on the bottom of the roster. These footnotes should be on all pages for all rosters.
   † Student did not complete the assessment.
   ¥ Not in school and/or system for full academic year.
   § Teacher halted the administration of one or more of the five tasklets after the student scored a 0 for three consecutive items within a tasklet on two different test administrations. Any completed tasklets have been scored and are reflected in the student's scaled score.

C. Section III.H Assignment of rperflevel applies only to CRT.

Appendix A

1. Items not available on the Braille form

Grade	Subject	Form	Position	Reporting Category
03	Mat	00	25	2
03	Mat	01	73	
04	Rea	00	21	2
04	Mat	00	10	4
04	Mat	00	45	2
04	Mat	01	50	
04	Sci	00	23	3
04	Sci	01	65	
10	Rea	00	60	2
10	Mat	00	23	6
10	Mat	01	32	
10	Mat	00	52	4
10	Sci	00	21	3
10	Sci	00	23	1